

INVESTIGATING TEACHER-CHILD RELATIONSHIPS AS PATHWAYS FOR LEARNING IN ELEMENTARY SCHOOL CLASSROOMS

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ABSTRACT

Cheryl A. Varghese: Investigating Teacher-Child Relationships as Pathways for Learning in Elementary School Classrooms
(Under the direction of Lynne Vernon-Feagans)

Researchers have increasingly focused on teacher-child relationships (TCRs) as malleable features within classrooms that can facilitate vulnerable children's learning, especially during the early elementary school years. TCRs are important social resources for children because they enable children to develop key competencies (e.g., academic) that are necessary for learning in classroom environments. This three-article dissertation examined different aspects of TCRs, child outcomes (literacy and behaviors), and classroom quality.

The first article synthesized empirical research on TCRs for elementary school students' literacy achievement. Themes across the review focused on overall associations between TCRs and literacy achievement and also focused on how teacher- and child-level characteristics were related to those associations. Additionally, findings of a meta-analysis using a subset of the reviewed articles suggested significant, albeit small, effects of close/support TCRs on literacy achievement; findings also suggested non-significant effects of conflictual TCRs on literacy achievement. The synthesis concluded with research-based recommendations for practitioners and researchers.

The second article used an attachment theory framework to understand associations between TCRs and children's literacy achievement and behavioral outcomes. Additionally, I examined whether or not there were gender and struggling reader differences in the associations between the quality of TCRs and children's literacy achievement and/or behavioral difficulties.

After controlling for child- and teacher-level characteristics, results of multi-level model analyses indicated that conflictual TCRs were significantly related to children's literacy achievement and behavioral outcomes. I did not find significant moderation effects for struggling reader status or gender TCRs and children's literacy achievement or behavioral outcomes.

The third article used an ecological systems theory framework to examine how classroom quality was related TCRs. In addition, I examined whether or not there were gender and struggling reader differences in the associations between classroom quality and TCRs. After controlling for child- and teacher-level characteristics, results of multi-level model analyses indicated that classroom quality was associated with less conflictual TCRs. No significant associations were found between classroom quality and close TCRs. Gender significantly moderated the associations between classroom quality and conflictual TCRs, suggesting that within higher quality classrooms, teachers were less likely to perceive conflictual relationships with boys.

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CHAPTER 1: INTRODUCTION

Teacher-Child Relationships

In efforts to identify how to support children's transition to the early years of elementary school, researchers have focused on how early elementary classroom environments can be structured to support all children's learning (Pianta & Walsh, 1996). Within early elementary classrooms, researchers have identified the relationships between children and their teachers as important features of classroom environments that influence an array of important child outcomes (e.g., academic, behavioral, and social outcomes) and shape the core of children's schooling experiences (Hamre & Pianta, 2005; Hughes, 2011; Pianta, 1999). Consequently, researchers have increasingly focused on teacher-child relationships (TCRs) as malleable classroom processes that can facilitate children's learning, especially in early elementary school (Gehlbach, Brinkworth, & Harris, 2011). Since TCRs are malleable processes within classrooms, there is potential for intervention-based work focused on improving TCRs (Pianta, 1999) – which may, ultimately, influence child outcomes.

During the early elementary school years, children tend to spend a majority of their time with the same classroom teacher, which contributes to why these relationships have been linked to children's academic and behavioral competencies (Ly, Zhou, Chu, & Chen, 2012). Young children often rely on their teachers to comfortably explore classroom environments. For example, children may rely on their teachers to engage with their peers or to participate in classroom activities. Additionally, the quality of TCRs can shape children's perceptions of

school (Baker, 2006; Pianta, 1999). Therefore, positive TCRs may function as important social resources that help children to cope with the demands that arise during the early schooling years (Pianta, Steinberg, & Rollins, 1995).

Researchers have developed a typology of TCRs based on the degree to which the relationships are close and conflictual (Birch & Ladd, 1997; Howes & Matheson, 1992; Pianta, 1999). In close TCRs, teachers are aware of and responsive to children's needs and they scaffold children's learning experiences in nurturing ways (Baker, 2006; Rudasill & Rimm-Kaufman, 2009). Moreover, close TCRs tend to provide young children with emotional security that enables them to participate in learning activities (Baker, 2006). Within a close TCR, the teacher is likely to perceive warmth and affection in his or her relationship with the child and is also likely to believe that the child perceives him/her as a source of support (Pianta, 2001). Conversely, within a conflictual relationship, the teacher is likely to perceive the child as being unpredictable and unresponsive to his/her efforts to engage or teach the child (Pianta, 2001). While close TCRs may help to stimulate children's learning behaviors, conflictual TCRs can hinder children's abilities to adjust to schooling demands (Roorda, Koomen, Spilt, & Oort, 2011). Currently, there is a growing body of research that has recognized positive TCRs as a component of effective teaching for young children. However, this body of research has not yet considered the role of TCRs for vulnerable subset of children: struggling readers.

In the first section of this chapter, I discuss the application of Sameroff and MacKenzie's (2003) transactional model to the study of TCRs and children's development. I then use this model to frame the importance of TCRs for struggling readers. Next, I describe classroom quality as an aspect of classroom environments that may be important for young struggling

readers. Lastly, I conclude with a synopsis of three studies related to TCRs, struggling readers, and classroom quality and I discuss the significance of the three studies.

Transactional Models and Teacher-Child Relationships

In efforts to elucidate how TCRs influence children's development during the early elementary school years, scholars have used Sameroff and MacKenzie's (2003) transactional models (Hughes, Luo, Kwok, & Loyd, 2008; Hughes & Kwok, 2007; Myers & Pianta, 2008). The transactional systems theory emphasizes a goodness-of-fit between the individual and context; that is, the degree to which there is a match between child characteristics and the classroom context contributes to optimal schooling experiences for children (Myers & Pianta, 2008; Rudasill & Rimm-Kaufman, 2009; Sameroff, 2000; Vernon-Feagans, Odom, Pancsofar, & Kainz, 2007). This perspective stresses that while contexts influence individuals' development, individuals are not simply passive recipients of contextual influences. An application of the transactional perspective to studies of TCRs suggests that child, family, teacher, classroom, and school characteristics exert bidirectional influences that dynamically impact TCRs (Myers & Pianta, 2008; Rimm-Kaufman & Pianta, 2001).

It is important to note that during the early elementary school years, TCRs are considered to be asymmetrical because teachers are the primary negotiators of their relationships with young children. Despite this asymmetry, both teachers' and children's attributes influence the qualities of TCRs (Pianta, 1999, p. 30; Sameroff, 1989). Teacher-level attributes (e.g., sensitivity, which is when the teacher is attuned to a child's verbal or non-verbal cues) and child-level attributes (e.g., reactivity, which is the presence and intensity of children's emotional reactions; Myers & Pianta, 2008) are wielded in the interactions between teachers and children. Over time, the interactions between teachers and children accumulate into patterns that determine the relational

quality between them (Pianta, 1999). The goodness-of-fit of TCRs is determined by the extent to which teachers' and children's attributes complement each other. Using the transactional model, therefore, TCRs are the products of the interactions that unfold between teachers and children.

Teacher-Child Relationships and Struggling Readers

While TCRs are likely to be beneficial social resources for all young children, TCRs may be especially important for young children who struggle to read. Currently, a third of children in the United States are not proficient readers by the third grade (National Assessment of Education Progress [NAEP], 2015); it is likely that children's difficulties in acquiring reading proficiencies began at the start of early elementary school. Young children who are identified as struggling readers often have difficulties with oral language (use of spoken words to express ideas) and phonological knowledge (aspects of production and properties of the sound system that are specific to a particular language; Gierut, 1986) and they may be at risk for reading disabilities later on in schooling. Approximately half of struggling readers are eligible for free or reduced price school lunch and come from either Black or Hispanic families, with approximately a third of these children living in rural communities (NAEP, 2015). Many struggling readers may not be able to benefit from general classroom reading instruction in the same ways as other children (Lee & Burkham, 2002; Vernon-Feagans et al., 2010). One reason is that many young struggling readers also experience behavioral challenges that can exacerbate their reading and other early academic challenges (Epstein, Atkins, Cullinan, Kutash, & Weaver, 2008; NAEP, 2013). Struggling readers may be vulnerable to a host of negative outcomes (e.g., school failure) because of child-level (e.g., low literacy skills, behavioral problems) and family-level characteristics (e.g., poverty, low parental education; Morrison, Connor, Bachman, 2005; Vernon-Feagans, 2009). Hamre & Pianta (2005) have found evidence that TCRs may be

important protective factors that buffer the impacts of school difficulties for children from low socioeconomic households and for children with behavioral difficulties; these findings may have important implications for struggling readers. Currently, there is limited empirical research that has specifically examined how struggling readers experience TCRs.

I hypothesize that even though supportive TCRs may be protective factors for struggling readers, struggling readers may be less likely to experience positive TCRs. Struggling readers are more likely to enter school with fewer school readiness skills and other key behaviors expected of children (Morgan, Farkas, & Wu, 2009), which may then increase their likelihood of engaging in cyclical negative relationships with their teachers. For example, teachers may experience greater stress when working with children who demonstrate low entry-level literacy skills and behavioral difficulties, perpetuating conflictual relationships between struggling readers and their teachers (Yoon, 2002). As suggested in Sameroff and MacKenzie's (2003) transactional model, bidirectional effects unfold between the teacher and struggling reader. Teachers may provide more learning opportunities and may be more responsive towards the children who they perceive to have stronger academic and social competencies (Stipek, 1998). Conversely, teachers may perceive children who have lower academic and behavioral competencies as being less "teachable" and this may result in either limited interactions or in purely instructional interactions with those students (Keogh, 2003; Myers & Pianta, 2008). Limited opportunities to engage with teachers may negatively impact children's development, potentially creating a snowball effect on children's achievement. Thus, this example highlights how the interactions between teachers and children are part of a transactional process that influences the relational quality between struggling readers and their teachers.

Classroom Quality and Struggling Readers

In addition to a supportive TCR, which is one type of indicator of high quality early elementary classrooms beyond academic instruction, researchers have also identified classroom quality as an important dimension of classroom environments (Burchinal et al., 2008). This study specifically focuses on classroom quality that is indexed by teachers' emotional support for and sensitive (i.e., attuned) interactions with children and by teachers' abilities to effectively organize and structure classrooms. Positive and negative interactions between teachers and students are classroom processes that have some direct impacts on children's outcomes (Curby, Rimm-Kaufman, & Ponitz, 2009; Early et al., 2007). Young children who engage in sensitive and emotionally supportive interactions with their teachers are more likely to develop better academic and behavioral competencies (Hamre & Pianta, 2005). Additionally, when teachers are able to interact with their students in positive and supportive ways, teachers are more likely to use practices that support and scaffold children's learning, which may then encourage children to further engage in classroom activities that support learning. Collectively, these dimensions of teacher-child interactions contribute to higher quality classroom environments. For struggling readers, access to high quality classroom environments may be an especially crucial correlate for greater school achievement.

Summary

Compared to other children, struggling readers are far more likely to experience difficulties with transitioning and adjusting to formal schooling because they may be more dependent on the relational processes within new school environments (Silver, Measelle, Armstrong, & Essex, 2005). Supportive relationships between teachers and struggling readers potentially minimize risks for poorer school-based outcomes, unlike unsupportive relationships between children and teachers, which potentially exacerbate those risks (Pianta, 1999).

Synopsis of Projects

The proposed project consists of three aims that contribute to and expand upon extant research on TCRs, child outcomes (literacy and behaviors), and classroom quality, while maintaining a focus on early elementary struggling readers. In Chapters 2-4, I apply and describe in greater detail two theoretical orientations to the study of TCRs and classroom environments: Attachment Theory and Ecological Systems Theory. Attachment theory (Bowlby, 1988) and the ecological systems model (Bronfenbrenner, 1999) provide two useful frameworks for examining current research on TCRs and its impacts on children's literacy achievement and behavioral difficulties. An attachment theory framework allows for a deeper understanding of how the qualities of the relationships between children and their caregivers inform children's behaviors, while an ecological systems framework allows for a comprehensive examination of proximal and distal factors that influence children's development. Both theoretical frameworks account for struggling readers' disadvantages upon entry to schooling, as well as their ongoing disadvantages in developing supportive relationships with their teachers. The mounting evidence for the positive impacts of TCRs compels us to expand our understanding of how the relationships function as protective factors for our most vulnerable students.

Each aim will examine different aspects of TCRs during the early elementary school years and the implications for future research, practitioners, and key stakeholders within education. Each aim is also associated with an individual study and results in three publication-ready manuscripts. The next section details the project associated with each aim.

Significance

As a whole, the three project aims investigate different aspects of TCRs. In this project, TCRs were examined as both predictors and outcomes, highlighting that the relationships play

reciprocal roles within the early elementary school environment. Findings from these project aims highlight factors that influence TCRs as well as the factors that are influenced by TCRs. As malleable factors, TCRs have important implications for future research and educational practices because of their potential to affect outcomes for struggling readers. Findings from this project specifically expand knowledge about TCRs in different schooling contexts, as two of the proposed projects will use the context of low-wealth rural schools. Rural children are an important, yet understudied, population vulnerable to higher risks of school failure.

Within rural communities, a greater proportion of children live in poverty, which are linked to diminished outcomes that hinder academic success (O'Hare, 2009). In Chapters 3 and 4, I expand on challenges within rural schools and potential implications of TCRs in those contexts.

Description of Aims

Aim 1. Synthesize salient findings and implications of TCRs for elementary school students' literacy achievement. To accomplish this aim, I conducted a systematic review of the most recent literature review that synthesizes current research on the association of TCRs with children's literacy achievement during the elementary school years. In response to burgeoning interest in equitable access to high-quality early elementary education, this manuscript focuses on empirical studies that use samples of elementary school children. The manuscript also focused on child-level demographic characteristics such as low maternal education, minority backgrounds, and family income levels, as well as low entry-level skills, which encompass children's low literacy achievement and limited behavioral development (Hamre & Pianta, 2005). Children with fewer opportunities to develop optimal school readiness skills may experience stronger associations between TCRs and literacy achievement. This synthesis reported descriptive effect sizes across a subset of the selected empirical studies to understand

the strength of the associations between TCRs and literacy achievement. The synthesis concluded with research-based recommendations for practitioners and researchers. Based on the synthesis and recommendations, I advocated for the importance of continuing to prepare teachers to establish emotionally and instructionally supportive relationships with their students, particularly with students who are most likely to experience the greatest disadvantages in school.

Aim 1 Research Question:

- 1. Based on empirical research conducted within the past ten years, what are the associations between TCRs and children's elementary school literacy achievement? What child- and teacher-related information is provided in this body of research?**

I conducted a systematic literature review that examines the empirical research produced within the past decade on TCRs and children's literacy achievement. I also qualitatively synthesized teachers' and children's characteristics found in this body of research. I reported effect sizes across the selected empirical studies to understand the strength of the associations between TCRs and literacy outcomes.

Aim 2. Empirically determine in a sample of rural struggling and non-struggling readers the extent to which early elementary conflict and closeness in TCRs predict to children's literacy achievement and behavioral difficulties. Examine whether or not there are gender and struggling reader differences in the associations between the quality of TCRs and children's literacy achievement and/or behavioral difficulties. This manuscript draws heavily upon attachment theory (Bowlby, 1988) as a framework to understand the implications of TCR qualities on children's literacy achievement and behavioral difficulties. I used a sample of kindergarten and first grade teachers and children to explore the associations between conflict

and closeness in TCRs and their associations with children's literacy outcomes and behavioral difficulties. I included child-level and teacher-level covariates (e.g., socioeconomic status, gender, struggling status, teacher education) in my models. The working hypotheses for this aim were that higher levels of conflict in TCRs would relate to lower literacy achievement and greater behavioral difficulties (e.g., externalizing and internalizing behaviors). I also hypothesized that compared to other children, male children and struggling readers would experience stronger associations between TCRs and literacy outcomes and behavioral difficulties. This hypothesis was supported by extant research, which suggested that male students are likely to experience less close and more conflictual relationships with their teachers (Ewing & Taylor, 2009; Gallagher, Kainz, Vernon-Feagans, White, 2013); it is possible that because these students are more susceptible to poorer TCRs, they may have lower literacy achievement and poorer behaviors. Poor TCRs may signify limited emotional support, which may result in less teacher attunement to children's literacy and behavioral needs (Roorda et al., 2011). It is also possible that poor TCRs result in fewer, positive, teacher-directed interactions with children, resulting in limited opportunities to develop literacy and behavioral competencies. Since there are limited studies that have examined associations between TCRs and literacy and/or behavioral outcomes for struggling readers, I hypothesized that compared to non-struggling readers, struggling readers would also experience stronger associations between lower qualities of TCRs and literacy and/or behavioral outcomes.

Aim 2 Research Questions:

1. Is struggling reader status associated with conflict and closeness in TCRs during the spring, after controlling for child-level characteristics? Does gender moderate the associations between struggling reader status and TCRs?

To examine this relationship, I used multilevel models to examine whether or not children's struggling reader status predicts to conflictual and/or close TCRs. I hypothesized that above and beyond the effects of child-level characteristics, children's struggling reader status will predict to higher levels of conflict and lower levels of closeness in TCRs. Given prior findings of boys being at greater risk for developing conflictual TCRs, I hypothesized that male struggling readers were more likely to experience greater levels of conflict with their teachers compared to female struggling readers.

2a. How does conflict in TCRs in the fall predict to students' end-of-year performance on the standardized literacy assessment? How does closeness in TCRs in the fall predict to students' end-of-year performance on the standardized literacy assessment?

To examine this relationship, I used multilevel models (to account for issues of nesting of children within teachers) to determine whether or not close and/or conflictual TCRs predict to children's spring literacy outcomes. I also used child gender and struggling reader status as moderators to examine this relationship. I hypothesized that close TCRs would predict to higher spring literacy outcomes, and that conflictual TCRs will predict to lower spring literacy outcomes. The primary analyses examined the extent to which children's literacy scores are a function of conflictual and close TCRs, while including teacher and child covariates (including struggling reader status). The multilevel equation for testing Research Question 2 builds on the original specification from the unconditional model.

2b. How does conflict in TCRs in the fall predict to students' externalizing and/or internalizing behaviors, after controlling for fall behavior scores? How does closeness in TCRs in the fall predict to predict students' externalizing and/or internalizing behaviors, after controlling for fall behavior scores?

To examine this relationship, I expanded upon the models in Question 2a to determine whether or not close and/or conflictual TCRs predicted to children's spring behavioral difficulties (i.e., externalizing and internalizing behaviors). I also used child gender and struggling reader status as moderators to examine this relationship. I hypothesized that close TCRs would predict to lower levels of externalizing and/or internalizing behaviors, and that conflictual TCRs would predict to higher levels of externalizing and/or internalizing behaviors.

2c. Are there gender differences in the associations between TCRs and children's literacy outcomes and/or behavioral difficulties? Are there struggling reader differences in the associations between TCRs and children's literacy outcomes and/or behavioral difficulties? Are there gender and struggling reader differences in the associations between TCRs and children's literacy outcomes and/or behavioral difficulties?

To examine this relationship, I expanded on the multilevel models mentioned in research questions 2a and 2b to create separate interaction terms for gender and struggling status and TCRs. I also hypothesized that compared to girls and non-struggling readers, boys and struggling readers would experience stronger associations between TCR qualities and literacy outcomes and/or behavioral difficulties.

Aim 3. Empirically determine in a sample of rural struggling and non-struggling readers the extent to which classroom quality predict to the quality of TCRs for all children. Examine whether or not there are gender and struggling reader differences in the associations between classroom quality and the quality of TCRs. This manuscript draws heavily upon the ecological systems theory (Bronfenbrenner, 1999) as a framework to examine how the ecology of classroom environments facilitate or diminish the quality of TCRs. Similar to the sample used in Aim 2, I used a sample of kindergarten and first grade teachers and students to explore the

associations between classroom quality and TCRs. Classroom quality, which was conceptualized as a composite score of teachers' emotional support and classroom management, primarily focus on the social interactions between teachers and children within the classroom environment (Brock & Curby, 2014). I included child-level and teacher-level covariates (e.g., race, grade, teacher education, socioeconomic status) in my models. The working hypothesis for this aim was that classroom quality would relate to lower levels of conflict and higher levels of closeness within TCRs. My analyses included two important moderators: gender and struggling reader status. Although there is very limited research that has explored these relationships, I hypothesized that male children and struggling readers would experience stronger associations between classroom quality and TCRs.

Aim 3 Research Questions

1. Does classroom quality predict to the end-of-year conflict in TCRs? Does classroom quality predict to the end-of-year quality of closeness in TCRs?

To examine this relationship, I used multilevel models (to account for issues of nesting of children, and teachers in schools) to determine whether or not classroom quality relates to close and/or conflictual TCRs. I hypothesized that higher classroom quality would predict to less conflictual and close TCRs, whereas lower classroom quality would predict to more conflictual and less close TCRs.

2. Are there gender differences in the associations between classroom quality and TCRs? Are there struggling reader differences in the associations between classroom quality and TCRs?

To examine this relationship, I expanded on the multilevel models mentioned in the first research question to create two separate interaction terms for gender and struggling status with

classroom quality. I hypothesized that compared to girls, boys would experience stronger associations between classroom quality and TCRs. I also hypothesized that the associations between classroom quality and TCRs would vary by struggling reader status.

CHAPTER 2: TEACHER-CHILD RELATIONSHIPS AND ELEMENTARY SCHOOL CHILDREN'S LITERACY ACHIEVEMENT: A SYSTEMATIC REVIEW OF THE LITERATURE

Introduction

A growing body of research has focused on teacher-child relationships (TCRs) as an aspect of high quality instruction for young children. A subset of these studies has examined TCRs within elementary school contexts to understand the possible effects of TCRs on young children's academic and behavioral skills. Indeed, the rationale for scholarship on TCRs aligns with sentiments echoed throughout the educational arena: teachers have one of the most important school-related influences on children's learning (Cohen-Vogel, 2011; Sanders & Horn, 1998). This may be especially true during the elementary school years, a period in which children begin to construct their identities as learners, understand classroom and school norms, develop social relationships with teachers and peers, and acquire strategies for developing school-based competencies (Entwisle & Hayduk, 1988). TCRs may be more influential for children during the early elementary school years given the demands of early schooling and children's reliance on teachers to cope with these demands, whereas there may be a downward shift in the importance of TCRs during the middle and end of the elementary school years, as other relationships (e.g., peer relationships) may become more influential in children's development (Baker, 2006). Nevertheless, researchers have primarily focused on the elementary school context in their investigations of TCRs as components of classroom environments related to children's achievement and difficulties in schooling. Currently, scholars not only consider

TCRs to be protective factors for young children's learning, but also consider teachers' abilities to develop close and trusting relationships with children as aspects of effective teaching in elementary schools (Birch & Ladd, 1997; Ewing & Taylor, 2009; Pianta, 1999; Skinner & Belmont, 1993; Wentzel, 2012). While there is growing research on the associations between TCRs and children's academic and behavioral adjustment, only a small subset of this research is focused on how TCRs are related to children's literacy development during the elementary school years (Murray & Murray, 2004).

There is a strong focus on literacy instruction during the elementary school years because literacy is a core requisite for learning across all subject areas. Consequently, a sizable body of research has centered on effective literacy instruction, particularly during the early elementary school years. Children who fail to acquire requisite literacy skills by the end of first grade are at heightened risk for school failure, entry into special education and later school dropouts, limited employment opportunities, and low incomes as adults (Craig & Washington, 2006; Entwisle, Alexander, & Olson, 2005; Juel & Minden-Cupp, 2000). National reports such as the National Assessment of Educational Progress (2015) continue to highlight persistent gaps in literacy achievement, as evidenced by a third of students who score "below proficient" on the reading assessment. For elementary school children, optimal TCRs may function as social resources within classroom contexts that support successful learning, including the development of literacy skills. Teachers who form positive relationships with children may also be better able to motivate and engage them (Wentzel, 2012). This may also further encourage children to attend to classroom activities that support literacy development.

The importance of the elementary school context and the mounting federal and school pressures to improve young children's literacy achievement warrant further attention for how

TCRs influence children's literacy development. To my knowledge, there has been no synthesis of research conducted in this area, and to that end, I have systematically reviewed empirical research that has examined the associations between TCRs and children's literacy achievement. While it is beyond the scope of the current review to focus on the developmental shifts of reading tasks (i.e., learning to read v. reading to learn), the review examines empirical evidence for the general associations between TCRs and children's literacy achievement during the elementary school years. In the following sections, I frame the study of TCRs using attachment theory, discuss the importance of TCRs during the elementary school years for children's literacy outcomes, and report the findings from a systematic review conducted in this area. I conclude with recommendations for future research in these areas and discuss implications for educators and researchers.

Attachment Theory

The literature focused on TCRs draws heavily from Bowlby's attachment theory framework. Since children are able to form multiple attachments with various caretakers, researchers have used attachment theory to understand the patterns and qualities of attachment between teachers and students (Bronfenbrenner, 1999). In a recent commentary on the TCR research, Verschueren and Koomen (2012) note that even though teachers engage in select caregiver behaviors, children and teachers do not form attachment bonds in the same way that children and their parents do. Nevertheless, the comparatively limited roles of teachers as attachment figures may still have important implications for children (Verschueren & Koomen, 2012) and TCRs may use similar mechanisms as caregiver-child relationships to influence children's development (Sabol & Pianta, 2012). Researchers have found evidence of the concordance between the caregiver-child relationships and TCRs that exist during the early years

of schooling (O'Connor & McCartney, 2006; Sabol & Pianta, 2012). That is, teachers were more likely to report poorer qualities of relationships with children who had insecure attachments to their teachers compared to children who had secure attachments to their caregiver (O'Connor & McCartney, 2006). Elementary school teachers assume a variety of roles when they work with students, including roles as instructors and caregivers (Pianta, 2001). During the early elementary years, teachers' roles as caregivers who emotionally support students may be particularly important. As children progress throughout elementary school, children may be less reliant on their teachers for emotional support, which may minimize the influence that TCRs may have on older elementary school children.

As borrowed from the literature on caregiver-child attachments, researchers have characterized qualities of TCRs by perceptions of warmth or security, anger or dependence, and anxiety or insecurity (Birch & Ladd, 1997; Howes, Phillipsen, & Peisner-Feinberg, 2000). Positive relationships with attachment figures provide children with emotional security and Bowlby (1982) describes this as a *secure base* from which children can then explore their environments (Miller, 2002). Bowlby posits that young children are intrinsically driven to seek proximity to certain "attachment figures" (Bowlby, 1982). The process of proximity seeking is activated by the ways the attachment figure fulfills the child's needs (Cassidy, 1999). When attachment figures are available and responsive to individuals' needs, individuals are then able to develop stable attachment security; these experiences enable individuals to develop distress-regulating strategies (Mikulincer & Shaver, 2005). Proximity seeking, which leads to close relationships, is an important process that determines whether or not the attachment figure becomes a secure base for the individual (Cassidy, 1999).

When children have secure attachments with their teachers, it is hypothesized that children feel secure to explore and learn in these environments (Birch & Ladd, 1996; Davis, 2003; Howes & Hamilton, 1992). On the other hand, children who have insecure attachments with their teachers are more likely to exhibit aggressive or withdrawn behaviors (Hamre & Pianta, 2001). In addition, teachers may be more likely to experience frustration with children they are less attached to. This may result in teachers trying to limit or heavily regulate children's participation in classroom activities or teachers distancing themselves from these children, potentially decreasing children's positive school experiences (Hamre & Pianta, 2001; Pianta et al., 1995). In schools, secure attachments are primarily cultivated within supportive learning environments that provide opportunities for students to engage with and attend to instructional content (Ladd, Birch, & Buhs, 1999).

A tenet of attachment theory states that children have internal working models that draw upon prior experiences of social relationships to inform future relationships (Bowlby, 1988; Bretherton, Ridgeway, & Cassidy, 1990; Davis, 2003; Sabol & Pianta, 2012). Internal working models describe how individuals process information that is associated with the attachment figure. This information is shaped by the accumulation of experiences with and perceptions of the attachment figures, which may be the teacher or a primary caregiver (e.g., mother; Kesner, 2000, pp. 66–67). The quality of children's relationships with a parent or caregiver heavily influences the child's internal models for interacting with other adults in future relationships (Pianta, 1999; Sroufe, 1983). An application of this to the study of TCRs suggests that children's internal working models are informed by patterns of interactions between themselves and prior caregivers as well their teachers during the early years of schooling. Teachers play a critical role in shaping the experiences that either enhance or limit the security of children's

attachment through internal working models (Bowlby, 1973; Kesner, 2000). Moreover, children's internal working models are largely responsible for children's expectations for and behaviors in future relationships with their teachers, ultimately reinforcing their internal working models for relationships with teachers (Kesner, 2000). For example, when a child finds his or her teacher to be sensitive and attuned to his or her needs, the child becomes more confident in the attachment figure's responsiveness and availability. Conversely, when the teacher is not responsive or consistently available, the process of proximity seeking breaks down, thereby hindering the child's attachment security. It is also important to note that children's experiences with prior caregivers (e.g., mothers) influence children's internal working models and this may, consequently, affect relationships with their teachers. A child who formed insecure attachments with his or her mother, for example, may find it more difficult to trust a teacher; this may result in a poorer TCR. With limited attachment security, the child may develop avoidance and anxiety attachment strategies; furthermore, the child's confidence in their attachment figure may be undermined (Mikulincer & Shaver, 2005).

During the early years of schooling, children's internal working models of their relationships with teachers may still be fluid; however, as children progress throughout schooling, their internal working models begin to stabilize and are shaped by their early relationships with teachers (Bowlby, 1982). Baker (2006) describes children's internal working models as organized self-system processes that influence how children engage in social contexts. Children's expectations of relationships with their teachers and the type of security that teachers provide children jointly impact children's development and learning (Baker, 2006; Howes & Hamilton, 1992).

Importance of Teacher-Child Relationships in Elementary School

Children's transitions into elementary school mark unique gateways into formal schooling that are encumbered with new demands, making children especially susceptible to teachers' influences. During the early years of schooling, TCRs may help to support and regulate children's development (Pianta, 1999). For example, supportive TCRs encourage students to capitalize on available learning opportunities and to adjust to the demands of formal schooling (Howes, Phillipsen, & Peisner-Feinberg, 2000). Children who experience warmer, closer, and supportive relationships with teachers are more likely to be engaged in the classroom (Birch & Ladd, 1997; Tucker et al., 2002). Children with higher levels of engagement tend to work harder, accept teachers' feedback, and attend to instruction – all of which are types of skills that are important for children's success in school (Ridley, McWilliam, & Oates, 2000). Because positive TCRs also heighten students' emotional security, children may be more actively engaged with learning tasks within the classroom (Thijs & Koomen, 2008). Securely attached children are more likely to comply with behavioral expectations within the classroom (Erickson, Sroufe, & Egeland, 1985). Conversely, discordant and dependent TCRs are indicative of less secure attachments, which is evidenced by poorer behavioral adjustment (e.g., more impulsive and aggressive behaviors; Erickson et al., 1985; Ewing & Taylor, 2009). When children are more dependent on their teachers, they may develop externalizing and internalizing behaviors that not only perpetuate behavioral maladjustment, but also result in limited and negative socialization experiences (Pianta & Nimetz, 1991). Moreover, discordant TCRs are likely to have negative, long-lasting effects (Davis, 2003). For example, a study conducted by Ladd, Birch, and Buhs (1999) illustrates how children's relational difficulties with their kindergarten teachers predicted less close and more conflictual relationships with their first grade teachers. In another study, Baker (2006) investigated the associations of TCRs with children's adaptive

schooling outcomes across the kindergarten through fifth grade years and found that there were consistent positive effects of TCRs throughout the elementary school years on children's classroom adjustment. This finding highlights the continuity of the effects of TCRs on elementary school aged children and suggests that children may still continue to use the internal working models that they developed during the early elementary school years to inform their expectations of teachers in later years (Baker, 2006). That is, children who perceived their teachers as being a source of support during the early years of elementary school are likely to form positive internal working models that influence their relationships with teachers in later years of elementary school.

Teacher-Child Relationships and Children's Literacy Outcomes

In the body of research on TCRs, there is an emerging focus on how TCRs specifically support children's literacy achievement during the elementary school years. In this work, researchers have suggested that the associations between TCRs and children's literacy achievement unfold in a transactional process (Hughes, Luo, Kwok, & Lloyd, 2008; Hughes & Kwok, 2007; Myers & Pianta, 2008) and have utilized Sameroff and MacKenzie's (2003) transactional model (the goodness-of-fit between the individual and context) to understand the associations. Various child- and teacher-level characteristics may influence the associations between TCRs and children's literacy achievement, creating bidirectional effects (McCormick et al., 2014). For example, teachers are more likely to form positive relationships with children who are more engaged and attentive; teachers may then spend more time engaging in literacy-based activities with attentive and engaged children, thereby contributing to greater literacy achievement for children who are more attentive and engaged. On the other hand, teachers may become more easily frustrated working with children who have lower literacy skills and this may

contribute to less optimal TCRs with those children. As a result of poor TCRs, teachers may avoid or limit instructional interactions with these children, thereby limiting opportunities for children to engage in literacy activities and potentially resulting in lower literacy achievement.

In the following section, I expand upon the discussion of bidirectional effects that often unfold in the associations between TCRs and children's literacy achievement. I use conflict and closeness/support to organize this section, as they have been identified as the two primary dimensions of TCRs and have been most commonly applied in this area of research (Pianta, 1999; Pianta, 2001).

Conflict. Typically, conflictual relationships with teachers reflect feelings of teacher ineffectiveness when working with a particular student or suggest that the teacher feels greater levels of frustration working with the student (Pianta, 1999). Consequently, conflictual TCRs may result in children being less engaged in literacy activities that support the acquisition of literacy skills. It is also possible that teachers may decrease the amount of time and effort that they spend working on literacy-based tasks with students, as teachers may perceive these efforts to be beyond their capabilities. When children develop insecure attachments to their teachers, they may feel less inclined to explore and engage in environments that may stimulate their literacy growth; children may even exhibit task-avoidant behaviors when they do not perceive the teacher to be a source of support and they may even be less likely to persist at tasks that can help reinforce or teach new reading skills. Pianta (1999) refers to this concept as 'affordance', a term that describes how children can adapt to developmental challenges (e.g., reading acquisition) when contexts are embedded with certain resources (e.g., positive relational quality). In TCRs that are encumbered by relational negativity, children have low affordances for acquiring reading competencies.

Closeness/Support. In contrast, TCRs may be characterized by higher levels of closeness, which suggest that teachers and children share warm affectionate relationships and that the teacher may be considered a resource or a support. This may indicate that the child is provided high affordances for learning, including acquiring reading skills. For example, when teachers provide emotionally supportive learning environments for their students, children are afforded opportunities that support “learning related processes important to academic functioning” (Hamre & Pianta, 2005, p. 951). Emotionally supportive teachers may be more attuned to children’s needs and may also provide more responsive and deliberate scaffolding to support children’s learning (Curby et al., 2009). Moreover, emotionally responsive teachers are likely to form stronger attachments with their students, thereby encouraging students “to take chances in their learning” (Curby et al., 2009, p. 913). Children who take chances on their learning may be more apt to develop key literacy skills because they are likely to engage in various classroom activities or explore classroom environments. In one of the few theoretical works explicating how TCRs support children’s literacy, Pianta (2006) delineates support and instruction as two key aspects of how relational qualities impact children’s literacy. Teachers’ support enables children to develop competencies such as attention, motivation, and help seeking – all of which are important elements of behaviors that support children’s reading (Pianta, 2006). Pianta (2006) describes the close and nurturing relationships between teachers and children as the “infrastructure” for children’s literacy development; that is, when children experience warm and close relationships with their teachers, children are more likely to participate and benefit from literacy-based activities with their teachers. The second aspect, instructional support, also plays a critical role in how children develop literacy skills. Instructional support draws upon the “relationship resources” (i.e., teacher’s emotional support) in order to explicitly teach a literacy-

based skill (e.g., decoding, comprehension). Support, therefore, can be thought of as a way for teachers to generate motivation and “buy-in” from the child to meaningfully engage in literacy activities.

Aims of Current Study

Given the heightened awareness of teacher-related influences on children’s literacy and the overall importance of TCRs on children’s development, this systematic review specifically examines the roles that TCRs play in creating opportunities for children to develop the necessary literacy skills that are foundational for future academic success. The following two questions guide the selection and review of studies:

1. How and to what extent do TCRs facilitate children’s literacy development during the elementary school years (K-5)?
2. What factors directly or indirectly influence TCRs and children’s literacy development over the elementary school years (K-5)?

Selection Methods

I conducted a systematic search of current research within the past decade to collect a comprehensive set of manuscripts that examined associations between TCRs and children’s literacy outcomes during the elementary school years. I consulted content (i.e., committee of early elementary school and literacy researchers) and process (i.e., library science specialist and research methodologist) experts who reviewed the search protocol. The search protocol was closely aligned with recommendations for conducting high quality reviews (IOM, 2011; Moher et al., 2009). The three primary databases used to search for articles included Academic Search Complete, ERIC, and PsycINFO. I used Google Scholar to supplement the database search and used the citation-chaining feature to find any other relevant articles. All articles from the

databases were compiled into RefWorks and were further screened based on title/abstract record review and duplicates. Table 2.1 shows the search terms used for this review; articles were screened based on the inclusion of one term in each column (i.e., teacher-child relationship and literacy outcome and elementary school). Although the term “teacher-child interactions” was included as a search term, studies were excluded if only classroom-wide teacher-child interactions were used. Additionally, studies were excluded if the study followed children beyond the elementary school years (i.e., beyond fifth grade).

TABLE 2.1 Search Terms in Systematic Review

<i>Age-related terms</i>	<i>Predictor Variables</i>	<i>Outcome terms</i>
<i>Elem*</i> <i>Early schooling</i> <i>Kindergarten</i> <i>First grade</i> <i>Second grade</i> <i>Third grade</i> <i>Fourth grade</i> <i>Fifth grade</i>	<i>Teacher-child relationship</i> <i>Teacher-child interactions</i> <i>Student-teacher relationship</i>	<i>literacy achieve*</i> <i>reading achieve*</i> <i>read*</i> <i>lit*</i>

The first author pulled full-text manuscripts for all records from the preliminary search to further examine the relevance of the articles. The first author also examined the reference lists for the included articles in order to find any other relevant sources and supplemented with an ancestral search. Figure 2.1 describes this search process, which began with a comprehensive database search and ended with the final selection of articles.

Inclusion criteria. Our search was restricted to manuscripts published between 2005-2015, to focus on more recently published research that was more relevant to researchers and practitioners currently studying the intersection of TCR and literacy achievement. Studies were included if associations between TCRs and literacy outcomes were directly tested using

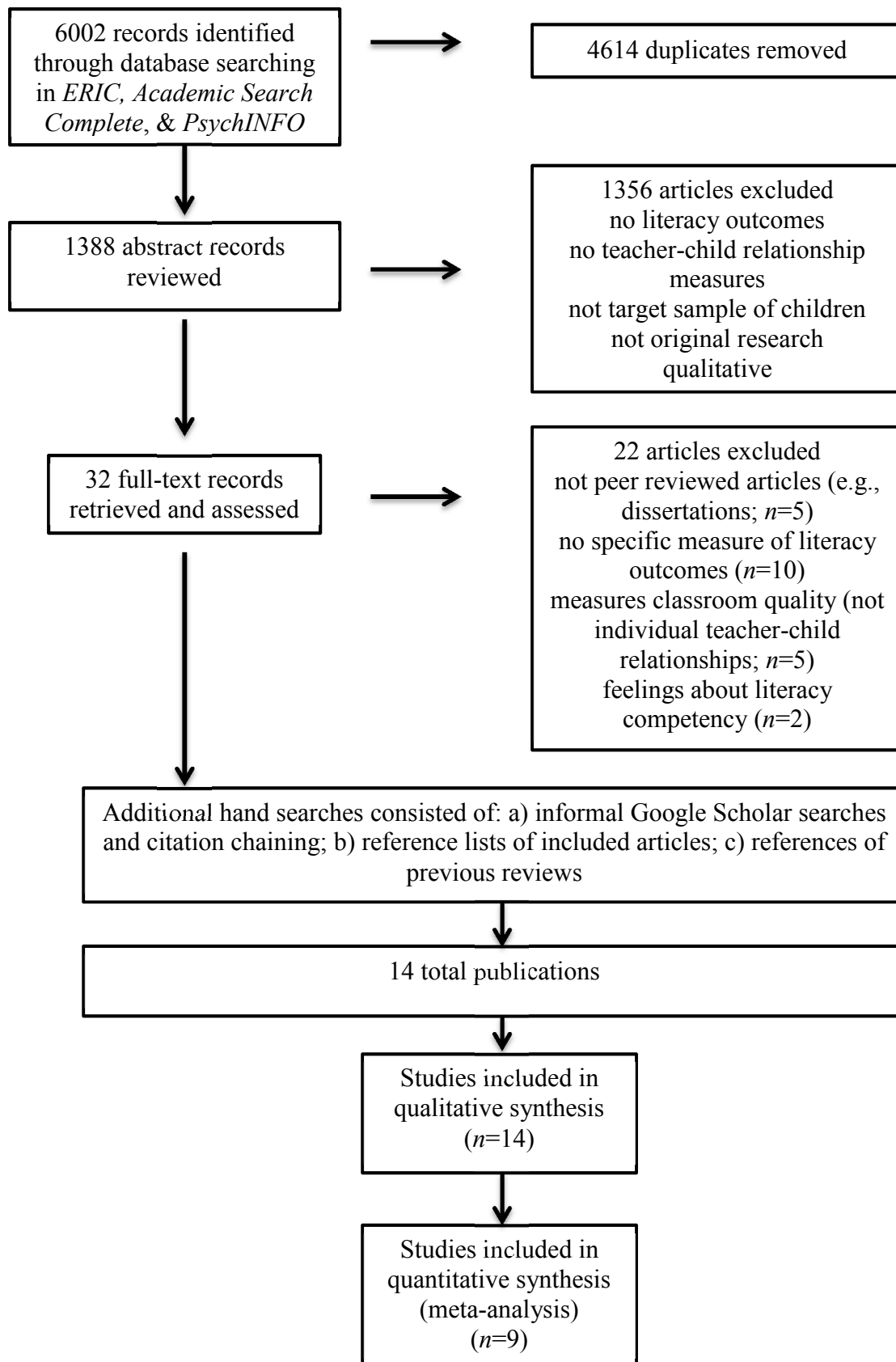
quantitative, statistical methods. Table 2.2 contains the inclusion criteria utilized for article selection.

After finding the relevant articles, I developed an a priori coding framework that was used to determine the fit of the article for the systematic review. An outside reviewer and I coded 20% of the 32 articles retrieved from education databases. After establishing reliability (average of .84 across articles), the first author coded the remainder of the articles and pulled relevant information from the articles. All of the included studies, along with descriptive information (about teachers, students, measures, etc.) provided within each study, are presented in Table 2.3.

TABLE 2.2 Inclusion Criteria for Article Selection

Publication years	2005-2015
Publication languages	English-language records
Publication types	Peer-reviewed research journals
Article types	Original empirical and quantitative studies
Sample age at outcomes	Kindergarten, first grade, second grade, third grade, fourth grade, fifth grade
Primary predictors	Teacher-child relationships/quality
Secondary predictors	Student and teacher characteristics
Outcomes	Literacy outcomes directly tested in the model with statistical findings reported (e.g., regression coefficients, effect sizes, p-values)

FIGURE 2.1 PRISMA Flowchart of Systematic Review Process



Meta-analysis procedures. A secondary goal of the current review was to examine the pooled effect sizes across the included studies. To calculate effect sizes, I used the following procedures within R and used the metacor and meta packages. The metacor package employs DerSimonian-Laird (DSL) random-effect meta-analytical approach that uses the correlation coefficients as effect sizes and the meta package was used to construct forest plots for the effect sizes (Chen & Peace, 2013; Schulze, 2004). Forest plots visually represent information about the point estimate and the uncertainty of effect sizes, summarizes findings across studies, and shows the heterogeneity of the effect sizes across studies (Card, 2012). Given the limited research in this area, I followed and adapted from the work conducted by Nurmi (2012) and Roorda, Koomen, Spilt, and Oort (2011); in both of these meta-analyses, researchers examined the correlation coefficients and transformed the coefficients into Fisher's Z scores. First, many of the included studies examined the associations between TCRs and children's literacy achievement and the correlation coefficients (r) were used as indices of the effect sizes (Borenstein, Hedges, Higgins, & Rothstein, 2009). The correlation coefficients were only available for a subset of the articles that were reviewed (for closeness, $n = 6$; for conflict, $n = 3$). Since the variance is highly dependent on the correlation coefficients, the correlation coefficients were transformed to Fisher's Z (an index of effect size), as shown by Equation 1 (Borenstein, et al., 2009; Rosenthal, 1991).

Equation 1. Reproduced from Borenstein, Hedges, Higgins, and Rothstein, 2009

$$z = 0.5 \times \ln\left(\frac{1+r}{1-r}\right)$$

Second, I transformed the r coefficients into Fisher's Z and computed the upper and lower limits of the 95% confidence intervals around the Fisher's Z scores. This is because the distribution of the correlation coefficients in the sample tends to be skewed around a given

population, whereas the Fisher's Z transformation of the correlation coefficient in the sample is symmetric within the population (Card, 2012). Third, R was used to compute the mean effect sizes across the studies using the random effects model. The 95% confidence intervals were also computed around the weighted effect sizes. I rejected the null hypothesis (i.e., no association) if the intervals did not include zero and if the Z value was statistically significant. Lastly, the averaged Fisher Z scores were then transformed back into correlation coefficients for ease of interpretability. I followed recommendations based on Lipsey and Wilson (2001) for interpreting correlation coefficients, such that small correlations are less than .10, small to medium correlations are between .10 and .25, medium correlations are .25, and large correlations are greater than .40.

Results

The themes of this review are presented in three sections. In the first section, I review the findings of the overall associations between TCRs and children's literacy achievement and report the meta-analysis findings. The second section is an exploration of how teacher characteristics may be related to the associations between TCRs and children's literacy achievement. In the third section, I discuss how child characteristics (including socioeconomic status, race, and gender) and child abilities may affect the associations between TCRs and children's literacy achievement. The review concludes with a discussion of these findings and with four recommendations for researchers studying TCRs and literacy achievement within the classroom context. In many of the articles that I reviewed, I found that close TCRs positively influenced children's literacy development and that conflictual TCRs negatively influenced children's literacy development. While many of these studies specifically looked at the unique contributions of TCRs on children's literacy outcomes, some studies examined child- and

teacher-level correlates in relation to these associations. In addition, some studies included information on how child-level abilities mediated associations between TCRs and children's literacy achievement.

Overall Associations between TCR and Literacy Achievement

Measures of teacher-child relationships and literacy achievement. Of the fourteen articles that examined the associations between TCRs and children's literacy outcomes, a majority of the articles found evidence for these associations. To measure teacher-rated TCRs, researchers primarily used Pianta's Student Teacher Relationship Scale (STRS) or Hughes' Teacher Network Relationship Inventory (TNRI), which is based on the Network of Relationships Inventory (Buhrmester & Furman, 1987). There are three subscales in the TNRI (Support, Intimacy, and Conflict), although only two of the subscales were used in the studies: "Support" (e.g., child gives me many opportunities to praise him or her, teacher enjoys being with this child) and "Conflict" (e.g., child and teacher often argue or get upset with each other, teacher often needs to discipline child). Similarly, there are three subscales in the STRS (Dependency, Conflict, and Closeness), although only the "Conflict" (e.g., teacher and child always seem to be struggling with each other) and "Closeness" (e.g., teacher and child share a warm, affectionate relationship) subscales were used in the studies. Although the items within both the TNRI and STRS differ, researchers seemed to conceptualize TCRs with a similar typology (i.e., Conflict and Closeness/Support). In one study, researchers used a child-rated version of the STRS (as adapted by Valiente, Lemery-Chalfant, Swanson, & Reiser, 2008), which reflected an overall quality of TCRs instead of specific dimensions within TCRs (i.e., conflict and closeness).

TABLE 2.3 Studies included in Qualitative and Quantitative Synthesis

Study	Article	Children Sample Size	Teacher Sample Size	At-risk sample	Child Dem.	Child Attributes	Teacher Dem.	Teacher Attributes	Grade	Relationship Scale (Respondent)	Literacy Outcome	Summary of Key Findings
1	Baker (2006)	423	68	Yes	Race: 63% African American, 9% Hispanic Gender: 55% male Parental education: FRL: 70% (of school district)	Child behavior	Gender: 96% female Race: 84% Caucasian, 14% African-American	Education, experience	K-5	STRS (Teacher)	Iowa Test of Basic Skills or the Stanford Achievement Test Series—Ninth Edition (Reading Composite Scores)	Overall TCR quality predicted children's reading (η^2 range from .02 to .10) Significant moderation effects for positive TCR and behaviors for children's reading
2a	Hughes & Kwok (2007)	443	133	Yes	Race: 41% African American, 60% Caucasian, and 66% Hispanic Gender: 52.6% male Parental education: 34.6% high school certificate or less FRL: 62.1%	Peer ratings of teacher–student support; engagement	Gender: 92.6% female Race: 85.7% Caucasian, 10.3% Hispanic, 1.6% African-American, and 1.6% other	Education, certification, experience	1	Teacher Relationship Inventory (Teacher)	WJ-III Broad Reading Scores (LW, PC, SS)	Engagement is significant mediator between the TCR and reading scores 5.9% of variance of TCR accounted by ethnicity contrasts
2b	Hughes et al.	671	337	Yes	Race: 34.9%	Conduct engagement,	Gender: 94.1%	Education, experience	1-3	Teacher Student	WJ-II Broad Reading	Effortful engagement

	(2008)				White, 36.7% Hispanic, 23.5% African American, and 4.9% Asian/Pacific Islander. Gender: 53.1% male Parental education: 35.1% high school certificate or less FRL: 58.0%	Effortful engagement	female Race: 81.3% White, 14.5% Hispanic, 2.7% African American, and 1.5% other			Relationship Inventory (Teacher)	Scores (LW, PC, SS)	fully mediates association between TCR and reading achievement Conduct engagement does not mediate association between TCR and reading achievement Mediation effect: $\Delta R^2 = .10$
2c	Hughes & Chen (2011)	714	319	Yes	Race: 34% White, 38% Hispanic, 23% African American, and 5% other Gender: 53% male Parental Education: 34.8% high school certificate FRL: 66%	Child rated academic self-efficacy and school belonging, teacher-rated behavioral engagement, IQ; grade retention	Gender: 95% female Race: 82% Caucasian; 14% Hispanic, 2% African American, and 2% other	Experience	1-3	Network of Relationships Inventory (Teacher & Child)	WJ-II Broad Reading Scores (LW, PC, SS)	Non-significant associations between conflict and closeness on reading achievement
2d	Hughes et al.	690	318	Yes	Race: 34.3%	Child rated academic	Gender: 95%	Experience	1-3	Network of Relationships	WJ-II Broad Reading	Teacher-rated behavioral

	(2012)				White, 38% Hispanic, 23% African American, and 4.7% other Gender: 52.8% male FRL: 58.7%	competence, teacher-rated behavioral engagement	female Race: 82% Caucasian; 14% Hispanic, 2% African American, and 2% other			Inventory (Child)	Scores (LW, PC, SS)	engagement mediates the effect of conflict on reading scores (SE = 0.07, $p = .01$) Non-significant mediation effects for warmth No gender or ethnicity moderation effects in mediation models
3	Kiuru et al. (2013)	538	130-136	Yes	Race: Finnish Gender: 57% Parental education: 6% only or less than comprehensive school	Risk for reading disability; peer acceptance;	N/A	N/A	1-4	4 items about positive affect for child	Composite score of: ALLU—Reading Test for Primary School, Word Chain Test, and Test of Sentence Reading Efficiency and Comprehension	Positive affect for student partially mediates the effect of RD risk in kindergarten on reading fluency (estimate = $-.03$, SE = $.02$, $p = .036$):
4	Lee & Bierman (2015)	164	256 classrooms (22 Head	Yes	Race: 14% Hispanic American, 30%	Teacher-rated aggressive behavior,	N/A	N/A	Pre-K, 1, 2	STRS (Teacher)	LW; TOWRE	Closeness significantly predicates to literacy skills

			Start classrooms; 113 kindergarten classrooms; 121 first grade classrooms)		African American, 56% Caucasian Gender: 44% male	social withdrawal, learning engagement						(B = .27, $p < .01$) Engagement significantly mediated the effects of closeness literacy skills ($z = 2.41$, $p < .05$);
5	Liew et al. (2010)	761	N/A	Yes	Race: 37% White Hispanic, 34% White non-Hispanic, 23% African American, 4% Asian or Pacific Islander, and 2% Other. Gender: 52% FRL: 61.3%	Observer rated effortful control, inhibitory control, and task accuracy	N/A	N/A	1	Teacher Student Relationship Inventory (Teacher)	WJ-II Broad Reading Scores (LW, PC, SS)	No main effects for associations between teacher support and reading achievement Significant interaction effects between positive TCR and task accuracy (ES = .25) on reading
6	Ly et al. (2012)	207	N/A	No	Race: 100% Asian American Gender: 49.8% male FRL: 57.8% Generation status:	N/A	N/A	N/A	1,2	Teacher Relationship Inventory (Teacher) Teacher Child Relationship Quality (Child)	WJ-III Basic Reading Skills	Warmth significant predicts reading achievement ($\beta = 0.17$, $p < .05$) Non-significant effects for

					21.3% first-generation; 78.7% second generation							conflict and reading achievement Non-significant gender and TCR interaction terms
7	McCor mick & O'Con nor (2015)	1,118	N/A	Yes	Race: 13% Black, 6% Hispanic, and 5% Asian or Pacific Islander. Gender: 52% male Maternal education: 10% less than a high school diploma	N/A	Gender: 96% female Race: 92% White	Experience	1, 3, 5	STRS (Teacher)	LW (WJ-III)	Significant within-child effect of teacher-child closeness on reading achievement ($\gamma = .04$; ES = .09). Significant between-child effect of conflict and reading ($\gamma = 0.25$, SE = 0.12, $p = .03$; ES = .06) Non-significant between-child effect of closeness and reading achievement ($\gamma = 0.21$, SE = 0.13, $p = .22$; ES = .05)

												No significant gender interaction terms
8	McCormick et al. (2013)	324	60	No	Race: 72% Black and 19% Hispanic Gender: 50% male FRL: 87%	N/A	Gender: 96% Race: 61% Black, 10% as Hispanic/Latino, 23% as White, and 6% as Asian or Biracial	Education	K	STRS (Teacher)	LW (WJ-III)	Non-significant relationship between high-quality TCR and reading achievement, ($B = 1.43$, $SE = 2.74$, $p = .74$)
9	Viljanta et al. (2014)	156	156	No	Race: Finnish Gender: 49% male Maternal education: 52% completed high school education	Temperament	Gender: 94.8% female	Experience	1, 2	Blocks' Child Rearing Practices Report (Teacher)	Reading Words Test; Oral Reading Fluency Test	No significant mediation effects or direct effects of teacher affection on reading
10	White (2013)	127	20	Yes	Race: 38% African American, 39% White, and 13% Native American. Gender: 53% male Maternal education: 14% did not complete	Struggling reader status	Gender: 95% female Race: 30% Black, 65% White	Education, experience	K, 1	STRS (Teacher) Feelings About School Scale (Children)	Writing Quality (Rubric)	Significant effect of conflict on writing ($B = .44$, $p < .001$, $ES = .06$) Non-significant effects of closeness on writing

					high school or receive their GED							
11	Wolter et al. (2014)	135	135	No	Race: German Gender: 48% male	Gender typicality of classroom activities	Gender: 100% female Age: $M=43.51$ years	N/A	K, 1	Closeness subscale from STRS (Teacher)	Weingarten er Grundworts chatz- Rechtschrei btest	Significant association between close TCR and spelling ($B =$ 1.91 , $SE =$ 1.06 , $\beta = 0.18$, $p < .10$, $ES =$ 0.32) For girls, significant interaction between gender typicality of activities and close TCR (ES $= .45$); non- significant for boys

Note: Dem. = Demographic Information

In another study, teachers completed the Finnish version of the Blocks Child Rearing Practices Report, which measured three dimensions of teachers' interactional styles with an individual student: affection, which is teachers' warmth, acceptance, and involvement with a children; behavioral control, which reflects teachers' attempts to control the child's behaviors; and psychological control, which refers to teachers' attempt to control children's thinking and emotions through guilt or disappointment (Viljaranta et al., 2015). Children's literacy achievement was predominantly measured through subtests from standardized assessments such as the Woodcock Johnson III (WJ) or the Test of Word Reading Efficiency (TOWRE). Generally, researchers created composite scores from subtests in individual or multiple literacy assessments.

Of the studies that used these measures, there were overall mixed results of the impact of conflictual and close TCRs. For instance, in a study conducted by Liew et al. (2010), positive TCRs predicted to children's broad reading skills – a finding also corroborated by other studies (e.g., Ly et al., 2012; McCormick & O'Connor, 2015). On the other hand, studies conducted by Hughes and colleagues (2011; 2012) and White (2013) highlighted only significant findings for conflictual relationships and children's literacy skills. Close TCRs may be indicative of positive supports that allow children to develop regulatory behaviors that then allow children to acquire key literacy skills. In close relationships, teachers and children may even be more likely to engage in more literacy-based activities that further support children's literacy skills. McCormick and O'Connor (2015) found that compared to conflictual TCRs, close TCRs had stronger implications for children's reading development over time, particularly during the later elementary school years. Contrary to these findings, Hughes and colleagues (2012) found stronger evidence for associations between conflictual TCRs and children's literacy

achievement. Conflict between children and teachers may represent challenges such as task avoidance that may indirectly impact children's literacy achievement. Some researchers, however, suggest that there may be stronger evidence for conflictual TCRs because conflict is more perceptible than closeness (Hughes, 2012) and relational negativity may be easier to rate between teachers and children. Hughes (2012) argues that it may be more difficult for teachers and children to be acutely aware of closeness in their relationships because relationships are generally dichotomized into supportive or not supportive, thereby making it difficult to be attuned to intricacies of close relationships.

Meta-analysis findings. In the meta-analysis, I included 6 studies for examining the effect sizes of the associations between closeness in TCRs and children's literacy achievement. The remainder of the articles were excluded from this portion if they did not include correlation coefficients between closeness and children's literacy achievement or if the study employed analyses outside of multiple regression or hierarchical linear modeling (not comparable to the other studies). Table 2.4 shows all the studies included in the meta-analyses. The results of the meta-analysis showed that closeness in TCRs was significantly and positively related to children's literacy achievement ($r = .18, p < .001$), as seen in Table 2.5. Figure 2.2 shows the forest plot of the studies included in the meta-analysis on close TCRs and children's literacy achievement. In the second part, 3 studies were included when examining the effect sizes for the associations between conflict in TCRs and children's literacy achievement. The results of the meta-analysis showed that overall, conflict in TCRs was not significantly related to children's literacy achievement ($r = -0.06, p = .25$), as seen in Table 2.5. Figure 2.3 shows the forest plot of the studies included in the meta-analysis on conflictual TCRs and children's literacy achievement. In the forest plots that depict the associations between TCRs (both close and

conflictual) and literacy achievement, readers can see the individual effect estimates for each study as well as the pooled effect estimates across studies.¹

TABLE 2.4 Studies included in the Meta-Analysis

Teacher-Child Relationships (TCR)	Sample Size	r	95% <i>CI</i>
Close TCR			
Hughes (2011)	714	0.15	[0.08, 0.22]
Lee & Bierman (2015)	164	0.27	[0.43, 0.12]
Liew et al (2010)	761	0.32	[0.26, 0.41]
Ly et al. (2010)	207	0.14	[0.00, 0.28]
White (2013)	127	-0.08	[-0.26, 0.10]
Wolter et al (2014)	135	0.19	[0.02, 0.36]
Conflictual TCR			
Ly et al. (2010)	207	-0.04	[-0.18, 0.10]
Hughes (2011)	714	0.10	[-0.26, -0.11]
White (2013)	127	-0.18	[-0.08, 0.28]

TABLE 2.5 Meta-Analyses Findings

Teacher-Child Relationships (TCR)	r	95% <i>CI</i>	Z	p	N	K
Close TCR	0.17	[0.06, 0.28]	0.18	0.00	2108	6
Conflictual TCR	-0.05	[-0.21, 0.11]	-0.06	0.25	1048	3

Note. Mean effect sizes for the associations between TCRs and literacy achievement (r), 95 percent confidence intervals for effect size, Z scores and their p-values, N = total number of participants, and K = number of studies.

¹ Each study corresponds to a box, in which the mid-point of the box corresponds to the mean effect estimate for the study. The area of the box represents the weight given to the study (typically determined by sample size). The width of the lines in the boxes shows the confidence intervals of the mean effect estimates for each study. The diamond below the boxes represents the overall effect size, and the width of the diamond represents the confidence intervals for the overall effect size across the studies.

FIGURE 2.2 Forest Plot for Close TCRs and Literacy Achievement

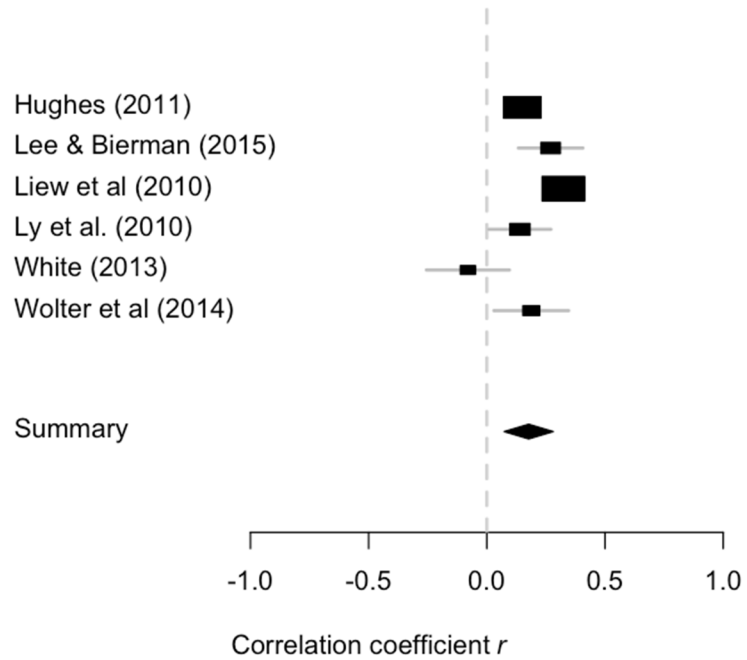
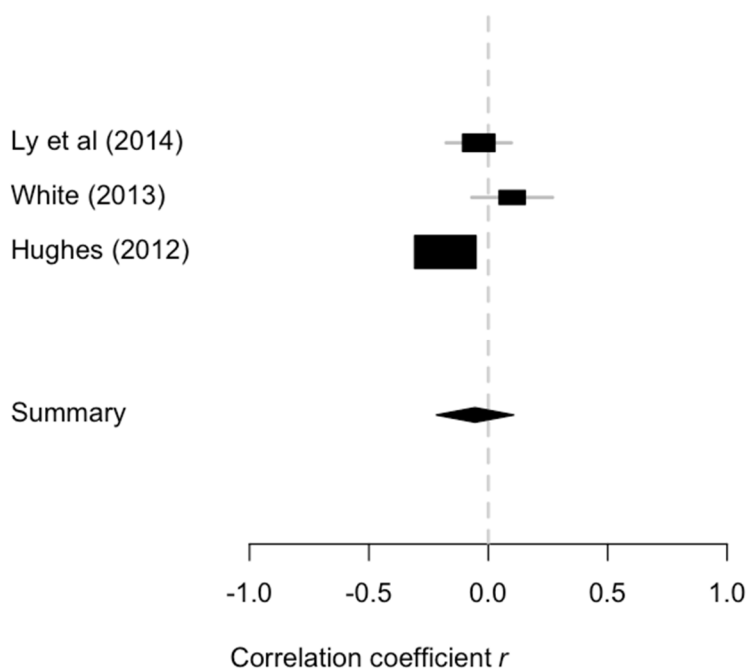


FIGURE 2.3 Forest Plot for Conflictual TCRs and Literacy Achievement



Teacher Characteristics

Across the studies included in the review, only two studies included information about teachers' characteristics in analyses exploring associations between TCRs and children's literacy achievement (McCormick & O'Connor, 2015; White, 2013). Most of the reviewed studies, however, included descriptive information (years of experience, levels of education, and race) about teachers. However, in statistical models of TCRs predicting to children's literacy, there was little to no information about whether or not there were main effects of teacher characteristics; additionally, there was no information about any interaction effects of teacher characteristics in associations between TCRs and children's literacy. McCormick and O'Connor (2015) included teachers' years of experience in their primary model examining associations between TCRs and reading achievement. They found no significant effects of teachers' years of experience on these associations. Aside from teachers' levels of education and years of experience, only one study included other information related to teacher-level characteristics. White (2013) included teaching styles (interactive and didactic teaching styles); interactive teaching styles were described as actively involving children in whole group, small group, or individual instruction and didactic teaching styles were described as teacher-directed instruction. White (2013) found that when including both types of teaching styles with conflict as a predictor of children's writing outcomes, interactive teaching styles were not a significant predictor of children's writing outcomes, but didactic teaching styles were negatively associated with children's writing outcomes (i.e., more teacher-directed instruction was related to lower qualities of children's writing outcomes). This study, however, did not report whether or not there were moderating effects of teaching styles and TCRs on children's writing outcomes.

Child Characteristics

In comparison to teacher-level characteristics, researchers have more extensively included child-level characteristics in their analyses on TCRs and children's literacy outcomes. In these analyses, researchers have typically included children's demographic characteristics, although a few studies have also included other child characteristics. Researchers generally included child-level demographic characteristics such as child gender, socioeconomic status (SES), and race.

Gender. Although many studies included gender as a covariate in analyses of TCRs and literacy achievement, seven studies examined moderating effects of gender between TCRs and literacy achievement. Findings across the seven studies were mostly consistent about the moderating role that gender played in associations between TCRs and children's literacy achievement. Overall, researchers did not find gender differences in associations between TCRs and children's literacy achievement (Hughes & Kwok, 2007; Hughes et al., 2008; Hughes, 2012; McCormick & O'Connor, 2015; Wolter, Gluer, & Hannover, 2014). The exception to this was findings from a study conducted by Ly and colleagues (2012), in which researchers found that when using a sample of Chinese American students, child-rated positive TCRs significantly predicted to boys' reading achievement. In the same study, there were no significant gender differences in conflict, warmth, or intimacy for reading achievement when using teacher-rated measure of TCRs. The authors utilized an academic risk perspective to explain that TCRs may be a more important social resource for boys because boys are at greater risk for academic and behavioral difficulties.

It is surprising that researchers did not find more differential gender effects between TCRs and literacy achievement, but collectively these findings suggest that there may be other nuanced differences beyond examining "male versus female" student. For example, in a study

conducted by Wolter and colleagues (2014), researchers found that German boys and girls experienced higher spelling outcomes if they experienced close TCRs and if they participated in learning activities that were in accordance with gender stereotypes (e.g., dancing or picture-books with household or family themes were considered to be enjoyed more by girls whereas sports or building blocks were considered to be enjoyed more by boys). Although it was unclear whether those findings would generalize to other populations of students, the study suggests that gendered effects may simply be confounded by other child characteristics or teacher practices in the classroom. In another study, Hughes (2012) found that although boys did experience higher levels of conflict and lower levels of warmth compared to girls, other risks associated with lower reading achievement might be greater contributors to the differential effects of TCRs. For instance, lower achievement or increased behaviors may be more salient predictors of close or conflictual TCRs compared to gender; in other words, gender may be a proxy for other nuanced differences among students.

SES. Across the reviewed studies, SES was typically conceptualized as 1) a composite of maternal education and family income or income-to-needs ratio or 2) eligibility for free and reduced lunch (FRL). Although researchers often provided descriptive information about the SES status of children's families, researchers generally did not include SES in their statistical models. This information was included in only 3 of the articles in the review. Of the studies that included SES as a covariate, no studies included information about interaction effects of SES and TCRs on children's literacy outcomes. For example, although Ly et al. (2012) found that SES was a significant predictor of children's literacy achievement, there was no information about whether or not SES had a moderating effect in the associations between TCRs and children's literacy. Hughes and Kwok (2007) also included SES as a covariate in their mediation analyses

and they found that SES was not significantly associated with TCRs; the authors did not report on any indirect associations with children's literacy achievement. In a few of the articles, authors used populations of students that were heavily concentrated with low-income children (i.e., over half of the students eligible for FRL; Hughes & Kwok, 2007; Hughes et al., 2008; Hughes, 2012; McCormick et al., 2013). Researchers of these studies hypothesized that in samples of children from low socioeconomic backgrounds, children would be less likely to experience optimal TCRs (McCormick et al., 2013). It is also important to note that although the associations of TCRs and children's literacy achievement were relatively mixed across these studies, the findings of these studies may have direct applications to populations of young children from low socioeconomic backgrounds. Currently, the mixed findings of TCRs and children's literacy achievement suggest that further research is warranted to understand how children from low socioeconomic backgrounds experience TCRs and how qualities of TCRs impact their literacy achievement.

Race. Many of the studies included in this review did not include information about children's race in the analyses. Similar to how researchers included children's gender and SES, children's race was often used for descriptive purposes. In one study, Ly and colleagues (2012) used a sample of Chinese American students to examine differences in relationship qualities, but primarily focused on generation status and SES within this sample of students. Another study included in this review examined contrasts between White, Hispanic, and African American students to understand mediational effects of TCRs on children's engagement and children's reading achievement (Hughes & Kwok, 2007). Findings from this study showed that when using the full sample of data, White and Hispanic students had higher scores on the TCR support construct compared to African American students. Mediation analyses also showed that positive

TCRs were associated with higher levels of engagement, which was in turn related to higher levels of reading achievement (Hughes & Kwok, 2007). There may be differential impacts for African American students because teachers may perceive African American students as exhibiting more behavioral difficulties and active interactional styles, which may then affect teachers' perceptions of relationships with these students (Hughes & Kwok, 2007).

Child abilities. Of the 15 studies reviewed, I was able to find five articles that examined child characteristics within the context of TCRs and literacy achievement. Many of the child characteristics varied across the studies. For example, Liew and colleagues (2010) examined moderating effects of children's task accuracy (attend to and follow instructions for completing fine motor tasks) and inhibitory control (deliberately slowing or stopping motor activity, shifting attention) in associations between TCRs and children's Broad Reading scores on the Woodcock-Johnson III (WJ III). Findings from the study suggested that after controlling for key child demographics (sex, ethnicity, economic adversity, and age), positive TCRs helped equalize children's reading achievement among children with varying levels of task accuracy. Teachers who were supportive and positive towards children, particularly those who had low effortful control and self-regulation abilities, may have helped to mitigate risks associated with low self-regulation and effortful control. Although only one study examined this specific child characteristic, there is some preliminary evidence for positive effects of TCRs on literacy achievement for students who struggle with fine motor tasks. Another child characteristic examined was children's language and literacy abilities. White (2013) did not find moderating effects of children's language ability (receptive language as measured by the Peabody Picture Vocabulary Test; PPVT) on associations between conflictual TCRs and children's writing outcomes.

Some studies employed mediation analyses when examining the contributions of children's abilities on the associations between TCRs and children's literacy outcomes (Hughes & Kwok, 2007; Hughes et al., 2008; Hughes, 2012). In a study conducted by Viljaranta and colleagues (2015), researchers found that although teacher-rated negative emotionality was associated with lower reading achievement at the first time point, there were no mediation effects via teachers' interaction styles on children's reading skills at the second time point. Kiuru and colleagues (2013) examined Finnish children's risks for later reading disabilities (based on children's phonological awareness and letter knowledge) in the associations between TCRs and children's literacy achievement. Researchers found that the effect of reading disability risk on children's reading fluency was partially mediated through teachers' positive affect. In this study, reading disability risk was associated with lower teacher-reported positive affect, which was then related to lower reading fluency in fourth grade. In their explanations of those associations, the researchers articulated several reasons: emotional security may facilitate children's concentration on learning, teachers' social support may motivate children to attend to literacy tasks, and teacher sensitivity may reflect greater attunement to children's individualized needs related to literacy.

In another study, researchers explored how children's engagement mediated the associations between TCRs and children's literacy achievement (Hughes et al., 2007; 2008). Using a sample of children with low literacy skills, the researchers found that children's engagement, which captured the extent to which children put forth effort in activities, paid attention, persisted on learning tasks, and participated in activities, significantly mediated the associations between TCRs and children's reading achievement. Hughes and colleagues (2008) expanded upon these findings in a later study that included more time points at which each

construct was measured; as found in the previous study, engagement significantly mediated the associations between TCRs and children's literacy achievement. Collectively, these studies highlight how TCRs influence children's engagement, which then lead to children's achievement outcomes. These relationships may be bidirectional in nature, as teachers may be more likely to form positive relationships with children who exhibit greater effortful engagement (i.e., persistence and focus on learning activities). It is also possible that when children exhibit greater effortful engagement, they may also be more likely to persist through academic tasks and experience higher achievement outcomes. Specifically, for children who had lower entry-level literacy skills, effortful engagement may be an important mediator between qualities of TCRs and children's literacy achievement. Children who already struggle to read may benefit from both positive TCRs and greater motivation to persist at learning tasks, as both may make unique and joint contributions to children's reading achievement, which highlights the various mechanisms through which TCRs influence literacy outcomes.

Discussion

In this systematic review, I focused on a subset of current empirical research that investigated the associations between TCRs and children's literacy achievement during the elementary school years. Positive TCRs may afford children a context in which they are more likely to explore their environments, attend to tasks, and persist in their efforts to engage and seek meaning – all of which may be related to higher literacy achievement. Conversely, negative or strained TCRs may limit children's engagement with tasks or may even result in teachers withdrawing support from particular students, which may negatively impact children's literacy achievement. Of the studies included in the review, there were trends for what researchers have primarily focused on and areas that, perhaps, warrant attention in future research. Across many

of these studies, researchers found mixed evidence for how qualities of TCRs are related to children's literacy achievement. Although some studies found significant relationships between closeness and conflict and children's literacy achievement, other studies did not. It is important to understand the contexts in which these associations are and are not significant. A meta-analysis of the effect sizes embedded within this review suggests small to moderate effects of closeness within TCRs on children's literacy achievement. Additionally, I found negative, albeit non-significant, associations between conflictual TCRs and children's literacy achievement in the meta-analysis. The effect sizes were primarily aggregated across studies that followed children over a shorter span of time (e.g., 1 school year) as opposed to being aggregated over the span of the elementary school years.

Researchers have most consistently included child characteristics such as gender, race, and SES; of the three demographic characteristics, researchers most consistently examined gender differences in the associations between TCRs and children's literacy achievement. Overall, findings of these studies suggested that there were no gender differences in the associations between TCRs and children's literacy achievement; that is, boys and girls experienced the associations between TCRs and literacy achievement in statistically similar ways. Race and SES were often included descriptively and were not extensively examined in the associations of TCRs and children's literacy. Child abilities were also less extensively included in research studies, with only one study that focused on children's effortful control and engagement. I was surprised to find that only a few studies included information beyond child demographic information. I hypothesize that studies of TCRs tend to be secondary research questions of larger research projects and researchers may have limited secondary data sets that extend beyond child characteristics. Moreover, researchers rarely or inconsistently included

teacher characteristics beyond years of experience, race, and levels of education within studies. In this review, I was only able to find one study that examined teacher-level variables beyond demographics; White (2013) included teaching styles (interactive v. didactic) in analyses, but did not examine moderation effects of teaching styles on the associations between TCRs and children's literacy achievement. Other teacher characteristics such as self-efficacy, stress, or knowledge have been largely omitted from these analyses, yet those types of characteristics may be more salient when examining the associations between TCRs and children's literacy. Based on this systematic review, I recommend four areas that warrant further research.

Recommendation 1: Increasing Breadth of Child and Teacher Characteristics as Mediators

As Hughes (2012) argues in her commentary on TCRs and child adjustment, including mechanisms for how associations between TCRs and child outcomes should be at the forefront of the new line of research in this area. It is possible that teacher characteristics and child characteristics (beyond demographic information) may mediate associations between the qualities of TCRs and children's literacy. I hypothesize that since many of the studies conducted in this area are secondary research questions, researchers may have had limited access to different measures that may include additional information about teachers and children. Collectively, our understanding of TCRs and literacy may be limited because scholars have not examined different mechanisms through which these pathways exist. For example, child persistence during literacy-based activities may be a possible mediator; increased conflict between teachers and children may decrease children's abilities to persist during a literacy-based task, thereby leading to lower literacy achievement. It is also possible that teachers who experience conflict with children may limit the amount of time they spend working with children. Researchers might include these types of variables when examining mediation

pathways between TCRs and children's literacy achievement. In the present review, researchers consistently provided theoretical support for why TCRs may be associated with children's literacy achievement, yet there is very little empirical support for how and why these associations exist.

Recommendation 2: Longitudinal Analyses

In addition to examining various mechanisms through which TCRs may influence children's literacy achievement, scholars ought to examine longitudinal effects of TCRs on children's literacy achievement. Currently, six studies examined longitudinal effects of TCRs. Longitudinal analyses of TCRs and children's literacy achievement may be especially important during the elementary school years because of the shift from "learning to read" to "reading to learn" that occurs during the third grade. In this review, I found some work (e.g. Baker, 2006) that has examined the longitudinal influences of TCRs on children's reading achievement and findings from the study showed that the overall TCR quality predicted children's reading achievement for first to fifth grade children. It is important to replicate these kinds of studies to understand the long-lasting influences of TCRs during this developmental period.

It may also be important to include various types of assessments to understand if TCRs are salient for varying aspects of children's literacy development. During the middle to late elementary school years, there is a shift in curricula to content-based instruction, in which students are expected to demonstrate content literacy skills and are expected to independently write (Mason, 2013). It is possible that during the middle to upper elementary school years TCRs may be more influential for children's decoding skills, whereas during the middle to late years of elementary school, TCRs may have a stronger impact on children's writing skills or

comprehension. Aligning grade appropriate and content-based assessments may yield a greater understanding of TCRs influences.

Recommendation 3: Diversifying Research Methodologies

Many of the studies included in this review used methods that did not allow for causal inferences. While it may not be feasible or ethical to design experimental studies in this area (e.g., randomize children based on high versus low qualities of TCRs), there are quasi-experimental research designs that can allow for stronger causal inferences in examining how TCRs predict to children's literacy achievement. Utilizing these types of research designs may help to build a more robust body of evidence that can inform future efforts for investing in professional development models or interventions focused on TCRs. In one of the only quasi-experimental studies in this corpus of research, McCormick and colleagues (2013) employed propensity score matching by using high versus low qualities of TCRs as a way to conceptualize "exposure" to a treatment. Although the researchers did not find qualities of TCRs to be predictive of children's reading achievement, these types of studies ought to be replicated. Additionally, studies that employ quasi-experimental research designs can expand our breadth of knowledge about populations in which TCRs may be stronger predictors of children's literacy achievement or can allow us to understand whether or not there are optimal thresholds of TCRs that support children's literacy achievement.

Recommendation 4: Measurement of Teacher-Child Relationships and Literacy Outcomes

In addition to examining mediation and longitudinal pathways in TCR analyses, researchers ought to also consider the different types of literacy assessments. In some of the studies, researchers varied in how they used standardized assessments; for instance, some researchers chose to collapse outcomes into a single construct, whereas others focused on

viewing subtests in isolation. Additionally, there were some studies that focused on specific skills (e.g., spelling; Wolter et al., 2014) that may not be central to children's literacy achievement when examined in isolation. Although there are certainly strengths to using standardized literacy assessments such as the Woodcock Johnson, it may also be important to compare and include school and classroom based assessments to understand practical implications of TCRs. It is important to understand if TCRs have more direct implications for children's performance on classroom-based activities. While standardized reading assessments measure specific literacy skills, classroom based assessments may provide a more holistic picture of children's literacy achievement.

In this body of research, scholars have used measures of overall qualities of TCRs (conflict and closeness/support). Conflict and closeness/support may not be consistent predictors of children's literacy achievement because the domains may capture general interactions that occur throughout the school day. It is possible that other dimensions of TCRs or teacher-child interactions are more aligned with growth in literacy achievement. In future work, researchers might consider conceptualizing different aspects of TCRs that may have direct applicability to children's literacy achievement.

Limitations

The current study is bounded by a few key limitations. First, the systematic review did not examine gray literature (e.g., policy briefs, dissertations), and I may have consequently excluded additional studies focused on TCRs and children's literacy. Additionally, the current systematic review synthesized the most recent literature within the past decade, and consequently, some studies may have been excluded because of the inclusion criteria. Although I searched multiple databases, reviewed reference lists, and conducted ancestral searches, it is

possible that some empirical research studies may have been omitted. The findings reported in this review are limited by what was reported in the peer-reviewed articles. For instance, researchers may have included other child- and teacher-level characteristics, but may have been limited by what they could report in the limited journal space allotted. It is possible that researchers had to determine which models and findings to report in their studies, and our current synthesis may not fully reflect the work conducted in this area. This meta-analysis included in our review may also be limited because of the sample of studies included. Given the small size of the studies included in the systematic review, even fewer studies were included in the meta-analysis because of complex analyses that could not be grouped with the majority of articles. It should also be noted that the meta-analysis was correlational in nature, as it was based on the correlation coefficients of studies; unlike studies using randomized experiments, studies that use regression or descriptive procedures warrant different analyses to calculate the aggregated effect size.

Conclusion

In this systematic review, I sought to examine the literature focused on TCRs and literacy achievement. Researchers generally found that close TCRs were positively related with greater literacy achievement; findings about the associations between conflictual TCRs and literacy achievement were less consistent. Although many studies included information about child demographic information, fewer studies examined how child characteristics were related to the associations between TCRs and children's literacy achievement. Future research ought to explore how child characteristics and abilities contribute to the relational qualities between teachers and children. The review showed that TCRs may be important social resources for children and there is some evidence that suggests that TCRs matter for children who are

vulnerable to adverse schooling outcomes. While further research is needed to expand our knowledge in this area, key stakeholders within education should consider how we can apply and embed our knowledge of positive TCRs to classroom contexts to improve the learning of children.

CHAPTER 3: ASSOCIATIONS BETWEEN TEACHER-CHILD RELATIONSHIPS AND CHILDREN'S LITERACY ACHIEVEMENT AND BEHAVIORAL OUTCOMES: AN APPLICATION IN RURAL ELEMENTARY SCHOOLS

Introduction

Researchers have linked children's early reading difficulties to a host of negative outcomes such as grade retention, entry into special education, and school dropout (National Reading Panel, 2000; Torgesen, Wagner, & Rashotte, 1997). Struggling readers also experience co-occurring behavioral difficulties, which may pose additional challenges in reading acquisition and general school achievement (Arnold et al., 2005; Morgan, Farkas, Tufis, & Sperling, 2008). Although the home environment plays an important role in the development of literacy and behavioral competencies, researchers have increasingly focused on malleable processes within the classroom environment that exert important influences on children's learning. Of the different classroom processes, teacher-child relationships (TCRs) in early elementary school have been consistently identified as an important mechanism for improving children's academic and behavioral development (Baker, 2006; Early et al., 2007, Lee & Bierman, 2015).

The early elementary years are a crucial time for children to develop literacy and behavior skills; in fact, higher competencies in both of these areas help to minimize the opportunity gaps that widen as children advance in school. Teachers and classrooms may exert especially impactful influences on children's acquisition of key literacy and behavioral competencies, allowing children to adjust to schooling demands (Cadima, Leal, & Burchinal, 2010). Despite a robust body of research that empirically supports the associations between TCRs and children's academic and behavioral development, there has been less attention to the

extent to which struggling readers experience these associations. Struggling readers may be particularly susceptible to the influences of TCRs, which may either hinder or support their acquisition of key developmental tasks (Downer, Sabol, & Hamre, 2010; Ewing & Taylor, 2009). Consequently, a focus on struggling readers may be important in understanding how this vulnerable population of children experience TCRs and how TCRs function as social resources for these children. Moreover, there has been less empirical work that has focused on teachers and children living in rural areas, which is an important context, albeit an understudied one. Compared to urban and suburban settings, there are more rural children who live in poverty and minority rural children experience double the poverty rates (O'Hare, 2009). Unfortunately, children in rural areas are also likely to have fewer school readiness and literacy skills and this may contribute to widening achievement gaps throughout schooling (Lee & Burkham, 2002).

In the current study, I aim to address these areas by using a sample of rural kindergarten and first grade students, including a subsample of struggling readers, to examine the associations between TCRs and children's literacy and behavioral outcomes. First, I describe the theoretical framework and the dimensions of TCRs. Then, I discuss associations of TCRs with children's literacy and behavioral outcomes, and describe how these associations may differ for struggling readers and how these associations may differ based on children's gender.

Theoretical Framework

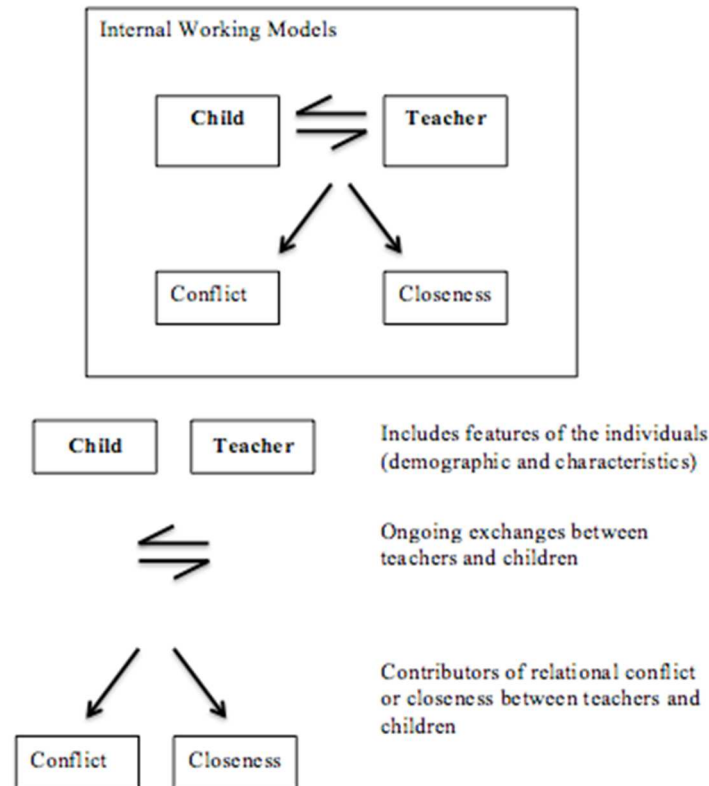
The study of TCRs is most deeply rooted within an attachment theory framework. Attachment theory has been predominantly applied to the study of early dyadic mother-child relationships. Researchers have used this theory to understand the formation and maintenance of the emotional bonds between the child and caregiver that support children's development (Bowlby, 1982). Positive caregiver-child relationships provide children with emotional security,

which Bowlby (1982) described as a *secure base* from which children can then explore their environment (Miller, 2002). Bowlby posits that young children are intrinsically driven to seek proximity to certain “attachment figures” (Bowlby, 1982). The process of proximity seeking is activated by the ways the attachment figure fulfills the child’s needs (Cassidy, 1999). When attachment figures are available and responsive to children’s needs, children are then able to develop stable attachment security; these experiences enable children to develop distress-regulating strategies that allow them to cope with challenges (Mikulincer & Shaver, 2005). Proximity seeking, which can lead to close relationships, is an important process that determines whether or not the attachment figure becomes a secure base for the child (Cassidy, 1999). A tenet of attachment theory describes children’s internal working models, which are mental representations of children’s perceptions or prior experiences of social relationships that are used to inform future relationships (Bowlby, 1988; Bretherton, Ridgeway, & Cassidy, 1990; Davis, 2003; Sabol & Pianta, 2012). Internal working models describe how individuals process information that is associated with the attachment figure. Eventually, internal working models become an accumulation of the child’s experiences with and perceptions of the attachment figure and these models inform children’s future relationships with other attachment figures (Kesner, 2000, pp. 66–67).

Since children are able to form multiple attachments with other caregivers, researchers have used attachment theory to understand the dynamics of TCRs, as teachers often assume caregiver roles during the early elementary school years (Pianta, 1999). Just as caregiver-child relationships are important for children’s development prior to kindergarten, TCRs may use similar mechanisms to influence children’s development in elementary school (Sabol & Pianta, 2012). During the early years of schooling, children’s internal working models are informed by

patterns of their interactions with teachers. This suggests that teachers play a critical role in shaping the experiences that can either collectively enhance or limit children's attachment security in future relationships with other teachers (Bowlby, 1973; Kesner, 2000). For example, when a child finds his or her teacher to be sensitive and attuned to his or her needs, the child becomes more confident in the attachment figure's responsiveness and availability. Conversely, when the teacher is not responsive or consistently available, the process of proximity seeking breaks down, thereby hindering the child's attachment security. With limited attachment security, the child may develop avoidance and anxiety attachment strategies; furthermore, the child's confidence in their attachment figure may be undermined, potentially lowering expectations of the attachment figure (Mikulincer & Shaver, 2005). During the early elementary years, children's internal working models of their relationships with teachers may still be fluid; however, as children progress throughout schooling, their internal working models begin to stabilize and are shaped by their early relationships with teachers (Bowlby, 1982). Baker (2006) describes young children's internal working models as organized self-system processes that influence how children engage in social contexts. Children's expectations of social relationships with their teachers, and the type of security (warmth or security, anger or dependence, and anxiety or insecurity) that teachers provide children, jointly impact children's behaviors and school readiness skills during the elementary school years (Baker, 2006; Birch & Ladd, 1997). Figure 3.1 illustrates how attachment theory can be used to frame the relationships between teachers and children. The figure represents how the exchanges between teachers and children contribute to the closeness and conflict; ultimately, these experiences form children's internal working models of their relationships with teachers.

Figure 3.1 Attachment Theory and Teacher-Child Relationships



Note: Adapted from Hamre & Pianta, N.D.

Of the different types of security, warm and secure attachments are considered to be optimal. Teachers who are able to foster warm and secure attachments with their students typically provide higher levels of emotional support in the classroom. Strong emotional support from teachers allows children to form secure attachments with their teachers. Children are then able to explore and learn in the classroom (Birch & Ladd, 1996; Davis, 2003). This is in contrast with children who form insecure attachments with their teachers. Insecure attachments with teachers are more likely to result in behavioral challenges (Hamre & Pianta, 2001). For example, children who have insecure attachments with their teachers may be likely to exhibit elevated levels of aggressive and oppositional behaviors and, in turn, their teachers may also be more likely to experience greater frustration with these children, which may result in stronger attempts

to control children's behaviors and in efforts to limit children's participation in classroom activities (Hamre & Pianta, 2001). Overall, this may decrease the quality of children's school experiences (Hamre & Pianta, 2001; Pianta et al., 1995). In schooling environments, secure attachments between teachers and children are primarily cultivated within supportive learning environments and with emotionally supportive teachers (Ladd, Birch, & Buhs, 1999).

Conceptualization of Teacher-Child Relationships

When children enter formal schooling, they undergo a transitional process that is not only encumbered by new demands, but is also susceptible to new influences. The quality of the dyadic relationships between teachers and children is an important platform through which teachers instruct children and children acquire multifaceted knowledge from their teachers (Pianta, 1999). During the early elementary school years, the social processes between teachers and children are critical resources that shape children's development (Pianta, 1999). The social processes that unfold between teachers and children can reflect optimal TCRs, which "can interrupt pathways to problems and direct children toward competent outcomes" (Pianta, 1999, p. 20) and which have important implications for children's development throughout early schooling.

Researchers have used an attachment theory perspective to derive two primary quality markers of the TCRs: closeness and conflict (Pianta, Steinberg, & Rollins, 1995). Both conflict and closeness align with the different types of security that a child experiences with an attachment figure, namely his or her teacher. Birch and Ladd's (1997) seminal study on TCRs in early elementary classrooms indicated that children's interpersonal styles could be generally described as moving toward or moving against, where moving toward relates to closeness and moving against relates to conflict.

Closeness. Closeness describes the amount of warmth and openness teachers feel toward students and the level of open communication between teachers and children. Close relationships with teachers may help improve children's attitudes towards school and may also increase children's engagement in school activities (Birch & Ladd, 1997). Close relationships facilitate positive schooling experiences for children (Wentzel, 2002). Positive TCRs are not only essential precursors to optimal learning, but they are also indicators of teachers' motivation to use supplementary resources and to expend additional effort to support students' achievement (Hamre & Pianta, 2001).

Conflict. Conflict describes the level of friction and discord in the relationship, and may often act as a stressor in children's adjustment to school and may compromise children's abilities to acquire key developmental competencies (e.g., academic, behavioral). Conflictual relationships between children and teachers may elicit feelings of anger and anxiety within children and may contribute to withdrawal or isolation from or disenchantment with school activities (Birch & Ladd, 1997). Conflictual TCRs have been linked to a host of detrimental outcomes, such as maladjustment or behavioral difficulties (Birch & Ladd, 1997; Pianta, 1999). Researchers found that conflictual TCRs during the early years of schooling were predictive of self-regulatory and social-emotional problems in later years (Baker, Grant, & Morlock, 2008).

Currently, there is mixed empirical evidence on effects of conflictual and close relationships with students' outcomes (e.g., behaviors, achievement; Baker, 2006; Hughes, 2012). Some researchers have hypothesized that conflictual relationships may be easier to detect than relational support and that teachers may be more sensitive to relational negativity with their students. In comparison, closeness between teachers and children may be difficult to perceive because close relationships are expected to be "the norm," making it more challenging to identify

closeness within relationships (Spilt et al., 2012). Nevertheless, both qualities of TCRs play important roles in influencing children's outcomes, specifically their literacy and behavioral outcomes. The following section reviews the current research and gaps in research on the associations between TCRs and children's literacy and behavioral development.

Teacher-Child Relationships and Children's Literacy

Although researchers have extensively studied optimal TCRs as mechanisms that support children's abilities to adjust to schooling demands (e.g., Baker, 2006; Birch & Ladd, 1997; Pianta, 1992), they have less extensively examined how TCRs support children's literacy achievement during the early years of schooling, where the focus of instruction and learning is primarily on children's early literacy development (Denton, Fletcher, Anthony, & Francis, 2006). Moreover, children with lower literacy skills are a subset of children that may be vulnerable to the relational supports within the school ecology (Buyse, Verschueren, Doumen, Damme, & Maes, 2008; Hughes, 2012). Overall, in the handful of studies that have examined associations between TCRs and literacy, researchers have found that close, responsive, and less conflictual TCRs are positively related to early elementary children's literacy skills, (Connor, Son, Hindman, & Morrison, 2005; McCormick, 2014). Despite theoretical support for the impact that TCRs might have on children's literacy achievement, there is, nevertheless, inconsistent empirical support for these associations. For example, while some researchers have found direct relationships between TCRs and children's literacy achievement (e.g., Baker, 2006; Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002; McCormick & O'Connor, 2015), others have found indirect relationships (e.g., Hughes & Kwok, 2007), or no relationships (e.g., McCormick et al., 2013).

Closeness. An application of attachment theory suggests that children who experience close relationships with their teachers may be more inclined to explore and engage in ways that promote greater learning involving literacy development. Close TCRs may also indicate greater frequencies of sensitive and responsive interactions that contribute to high quality learning experiences and active engagement with literacy-based activities (McWilliam, Scarborough, & Kim, 2003; Ponitz, Rimm-Kaufman, Grimm, & Curby, 2009). When children interact with their teachers in frequent and enjoyable ways, children may develop positive dispositions for literacy activities (Pianta, 2006). Children may be more inclined to explore their classroom environments or to show more interest in literacy-based activities, which may have positive impacts on their literacy achievement. Increased security in TCRs may also provide more opportunities for teachers to deliver explicit instruction on core, requisite literacy skills (e.g., phonics instruction; Pianta, 2006). Close TCRs may provide contexts that enable children to attend to reading tasks and practice self-regulation, which are important prerequisite skills for learning other literacy concepts (e.g., letter-sound correspondence; Pianta, 2006). Therefore, children who develop close relationships with their teachers may be more apt to develop the behavioral and emotional competencies that allow them to engage with literacy-based activities, which ultimately leads to improved literacy skills (McCormick & O'Connor, 2015). Within close TCRs, teachers are likely to feel more effective working with an individual child, which can help to overcome minor setbacks (e.g., a bad mood, less engagement) that may occur during the day (Wolter, Gluer, & Hannover, 2014). In a sample of German kindergarten children, Wolter and colleagues (2014) found that closeness was a marginally significant predictor of children's spelling competence, but that when teachers offered gender-specific literacy activities in the context of close TCRs, boys and girls were both likely to experience higher spelling

outcomes. Children may have been more likely to experience greater spelling outcomes when they participate in certain literacy activities and share close relationships with their teachers.

Conflict. In contrast to close TCRs, conflictual relationships are posited to be associated with lower literacy achievement. Because conflictual relationships are associated with behaviors such as school avoidance and lower self-directed behaviors within children (Birch & Ladd, 1997; Pianta, 1999), teachers may struggle to deliver literacy instruction to these children. Teachers and children who experience greater levels of relational conflict may not be as inclined to spend more time engaging in literacy-based activities, particularly in small groups or one-on-one instruction, thereby limiting opportunities for children to advance their development of literacy skills (Pianta, 2006). Although there is compelling theoretical support for associations between conflictual TCRs and children's literacy achievement, there is less robust empirical support for the associations between conflictual TCRs and children's literacy achievement (McCormick & O'Connor, 2015; Roorda et al., 2011). In a study of middle to upper elementary students, McCormick and O'Connor (2015) found that conflict between teachers and children was related to lower reading achievement whereas closeness between teachers and children was related to higher reading achievement, as measured by the Letter-Word Identification subtest from the Woodcock Johnson III. However, in the same study, researchers noted that when looking at these associations over time, close, but not conflictual, TCRs were associated with children's reading achievement. In a study of academically at-risk first graders, Hughes and Chen (2011) did not find significant associations between conflictual TCRs and children's reading achievement, although findings of the study showed that the collective perceptions of TCRs did have a minimal effect on children's reading achievement ($R\text{-squared} = .011$). Researchers have

generally found that compared to conflictual relationships, close TCRs may be more salient indicators of children's literacy development (McCormick & O'Connor, 2015).

Teacher-Child Relationships and Behavioral Outcomes

There is longstanding evidence for how behavioral difficulties impede children's abilities to attend to classroom instruction (e.g., Epstein et al., 2008). Young children who exhibit behavioral difficulties (e.g., aggressive or withdrawn behaviors) are likely to experience lower academic outcomes and poorer social adjustment (Ladd & Profilet, 1996). Early manifestations of behavioral problems have been linked to long-term deleterious effects, such as increased risk for school dropout or even criminal activities (Morgan, Farkas, Tufis, & Sperling, 2008). Researchers have identified supportive TCRs as protective factors that not only mitigate children's behavioral difficulties, but also influence children's behavioral trajectories over an extended period of time (Hughes, Cavell, & Wilson, 2001). For example, in a longitudinal study that followed a sample of kindergarten students until eighth grade, Hamre and Pianta (2001) found that the quality of children's relationships with their kindergarten teachers predicted their behavioral adjustment during adolescence. Similarly, findings of another study illustrated how positive relationships with teachers improved children's behavioral trajectories, especially for children who exhibited early aggressive behaviors early on (Hughes & Cavell, 1999). Supportive TCRs may allow children to develop behavioral competencies (e.g., self-regulation) that are integral to their adaptations to the school environment.

Children with behavioral difficulties are at considerable risk for developing conflictual relationships with their teachers (Sbarra & Pianta, 2001) and there are various theories for why teachers are likely to experience more conflict with children who exhibit behavior problems. Researchers have highlighted that associations between TCRs and behaviors may be

bidirectional. For example, children with behavioral problems tend to be more disruptive to classroom instruction and they tend to have more trouble in their social interactions with their peers, which may require their teachers to intervene more frequently. Additionally, teachers are more likely to criticize and interact punitively with these children (Henricsson & Rydell, 2004). Punitive interactions and negative responses from teachers may exacerbate smaller behavior problems into more serious ones, such as inattention and increased aggression (Hamre et al., 2008; Henricsson & Rydell, 2004). Thus, a transactional process unfolds between children and teachers – children who exhibit problem problems form conflictual relationships with teachers, perpetuating a cycle of negative interactions with their teachers (Sutherland & Morgan, 2003).

Ultimately, children's behavioral difficulties may hinder teachers' effectiveness with these children, and may even result in frequent stress-induced reactions or teachers' withdrawal of support for those students (LaPointe, 2003). Conflictual relationships between teachers and children function as stressors that can deter children from participating in school activities and may further hamper children's behavioral adjustment to school (Mantzicopoulos, 2005). Additionally, teachers may perceive children with behavioral difficulties as lacking motivation and skills necessary for academic success, further straining the quality of TCRs (Kuklinkski & Weinstein, 2000; Myers & Pianta, 2008). Compared to their peers, children with behavioral difficulties may benefit more from their teachers' attention and support, but may be less likely to receive this from their teachers (Patrick, Mantzicopoulos, Samarapungavan, & French, 2008; Sutherland & Morgan, 2003). Ultimately, children's behavioral problems may continue to escalate, and subsequently worsen TCRs (Sutherland & Oswald, 2005). Further, children's behavioral adjustment is heavily influenced by the quality of their relationships with their

teachers, and when children identify their teachers as being a source of security, they may be able to break the vicious cycle of maladaptive behaviors (Buyse et al., 2008).

Types of behavioral difficulties. Behavioral difficulties are typically distinguished based on children's internalizing and externalizing behaviors (Goodman, 2001; Hinshaw, 1992). Although items on the behavioral rating inventories collapse into the internalizing and externalizing behavior categories, researchers have rarely distinguished between the two when examining associations between TCRs and behaviors. Internalizing behavioral difficulties are primarily characterized by feelings of depression, anxiety, or social withdrawal (Achenbach & Edelbrock, 1978; Mash & Barkley, 1996), whereas externalizing behaviors are characterized by feelings of aggression or impulsivity (Hinshaw, 1992). In the current study, it is important to note that within the sample of struggling and non-struggling readers, indicators of internalizing and externalizing behaviors represent elevated levels of behavioral difficulties rather than clinically significant levels of behavioral disorders (i.e., students were not identified as having behavioral disorders). However, both externalizing and internalizing behaviors present significant risks for children and may result in continued behavioral, academic, and social maladjustment – ultimately compromising children's development (Baker et al., 2008). In the following sections, I use theory and empirical research to inform the discussion of associations between TCRs and internalizing and externalizing behaviors.

Externalizing behaviors. Externalizing behaviors tend to be more overt and disruptive within the classroom environment and they create implicit challenges that limit how much children profit from classroom instruction (Myers & Pianta, 2008). As a result, TCRs may be encumbered by relational negativity because teachers expend more time, energy, and resources to manage those types of behaviors (Mantzicopoulos, 2005). During the early years of

schooling, teachers are more likely to identify disruptive behaviors (e.g., aggression, impulsivity) within children who they perceive as lacking school readiness skills (Rimm-Kaufman et al., 2002; Rimm-Kaufman, Pianta, & Cox, 2000). Children's disruptive behaviors may be particularly challenging for early elementary teachers because the behaviors may be symptomatic of other co-occurring difficulties such as engagement. Teachers may be more likely to feel fatigued and emotionally drained working with students who exhibit behavioral difficulties, which may lead to a cycle of punitive interactions that exacerbate children's behavioral difficulties. Children who display externalizing behaviors may exhibit aggressive behaviors that result in hostility or anger towards teachers, further straining relationships with their teachers and attenuating their behavioral outcomes (Mantzicopoulos, 2005). Close TCRs may provide contexts for children that help to reduce the occurrences of behavioral difficulties. It is possible that within the context of close TCRs, children perceive their teachers as sources of support and as resources for helping to cope with behavioral difficulties; it is also possible that teachers may simply feel more effective in handling children's behavioral challenges, thereby lessening the occurrence of these behavioral challenges.

Internalizing behaviors. Children with internalizing behaviors are also vulnerable to a host of diminished outcomes, such as poor academic achievement (Masseti et al., 2008). Children with internalizing behaviors may be more withdrawn, thereby either avoiding interactions or excessively interacting with teachers (Burgess, Wojslawowicz, Rubin, Rose-Krasnor, & Booth-LaForce, 2006). Children with internalizing behaviors tend to form more dependent relationships on their teachers, which may be a reflection of anxious behaviors (Henricsson & Rydell, 2004). Children who are anxious and withdrawn may also be overly reliant on their teachers as a source of support within the classroom or they may even be

reluctant to explore classroom environments, which can stifle their development (Henricsson & Rydell, 2004). Close TCRs can be especially important social resources for children with internalizing behaviors because the relationship can help children to cope with school demands. However, there is evidence that suggests children with internalizing behaviors are less likely to form close relationships with their teachers. For example, in one of the only studies to distinguish between externalizing and internalizing behaviors, Henricsson and Rydell (2004) found that during child-initiated interactions with teachers, Swedish first grade children ($n = 526$) with internalizing behaviors were more likely to experience conflictual encounters with their teachers (Henricsson & Rydell, 2004). It is possible that because children with internalizing behaviors tend to exhibit anxious and withdrawn behaviors, teachers expend more energy and time working with these children, potentially causing more frustration and stress for teachers. Collectively, this may have a negative impact on teachers' perception of their relationships with those students.

Teacher-Child Relationships and Struggling Readers

Although there is some research on the associations between TCRs and children's literacy and behavior, we know very little about how struggling readers experience these associations. Struggling readers constitute a vulnerable subset of students, making it important to understand how they fare academically or behaviorally when they experience either close or conflictual TCRs. Generally, researchers agree that there is a bidirectional relationship between behavioral and reading difficulties: students who have reading difficulties often demonstrate behavioral difficulties and students who demonstrate behavioral difficulties are often at risk for reading problems (Hagan-Burke et al., 2011). For example, in a study utilizing a sample from the Early Childhood Longitudinal Study—Kindergarten Class (ECLS-K), Morgan and

colleagues (2008) found that when students experienced reading difficulties, the odds of children engaging in problem behaviors (e.g., poor self control, externalizing problem behaviors, internalizing problem behaviors) were greater. Third grade students who were struggling readers were almost twice as likely to display externalizing or internalizing behaviors, even after accounting for prior problem behaviors, socioeconomic status, and other demographic characteristics.

Given that demographic factors such as low socioeconomic status and poor reading difficulties are also associated with behavioral difficulties (Crews et al., 2007), it is important to consider how processes such as TCRs uniquely contribute to struggling readers' behavioral difficulties and literacy achievement. Thus far, I was only able to find one study that examined the associations between TCRs and literacy achievement for struggling readers. Using a sample of Finnish kindergarten children identified as being at risk for reading disabilities, Kiuru and colleagues (2013) investigated four questions to understand teachers' positive affect for children. Teachers' positive affect was conceptualized as the extent to which teachers felt satisfaction, joy, helplessness, stress and frustration when working with students (p. 355). In their study, the researchers found that children who were identified as being at risk for reading disabilities were less likely to experience positive affect from their teachers. However, further research is needed using an established measure as well as understanding other dimensions of TCRs. Close TCRs may help struggling readers to experience greater growth in their literacy achievement, as teachers may feel more effective working with the particular student and the student may utilize the teacher as a resource and source of support in the classroom. Teachers may experience more frustration and a greater sense of failure when working with struggling readers, especially considering struggling readers' likelihood for behavioral challenges. Struggling readers may

even exhibit more task avoidant behaviors, requiring teachers to spend more effort and energy in helping them. Consequently, struggling readers may be at risk for developing more conflictual and less close relationships with teachers. In fact, struggling readers with conflictual relationships may be prone to behavioral and exacerbated reading difficulties, making it imperative to examine if, and how qualities of TCRs function as protective factors for these children.

Teacher-Child Relationships and Gender

Researchers have examined how child gender relates to levels of conflict and closeness within TCRs. For example, teachers tend to perceive boys as having more behavior problems and teachers' perceptions may result in more conflictual relationships with boys (Gallagher et al., 2013). On the contrary, teachers are more likely to experience closer relationships with girls and as a result, girls may feel greater emotional security in their relationships (Birch & Ladd, 1997; Ewing & Taylor, 2009; Silver, Measelle, Armsrong, 2005). Researchers have posited that this trend may emerge because boys may experience more behavioral difficulties during the elementary school years (Hibel, Farkas, & Morgan, 2010; McCormick & O'Connor, 2015). Girls, however, may experience an advantage in the classroom, since they are able to form higher qualities of relationships with their teachers and tend to also score higher on both teacher reports of academic competence and standardized measures of reading achievement (McCormick & O'Connor, 2015; Robinson & Lubienski, 2011). However, close relationships may be a compensatory mechanism that supports boys' reading achievement, whereas conflictual relationships may adversely affect boys' reading achievement. In one of the few studies of TCRs and children's reading achievement, however, McCormick and O'Connor (2015) found nonsignificant differences in reading achievement by gender. Indeed, there has been mixed and

limited empirical research that has examined whether or not the associations between TCRs and children's achievement and behavioral outcomes vary by gender.

Goals of the Present Study

In the present study, I examined the individual associations between conflictual and close TCRs and children's literacy and behavioral outcomes across the school year. I focused on a sample of rural teachers and children, and specifically looked at a subset of children who were identified as struggling readers. The current study is guided by the following research questions:

- 1. Is struggling reader status associated with conflict and closeness in TCRs during the beginning of the school year, after controlling for child-level characteristics? Does gender moderate the associations between struggling reader status and TCRs?**

I hypothesize that above and beyond the effects of child-level characteristics, children's struggling reader status will predict to higher levels of conflict and lower levels of closeness in TCRs. Given prior findings of boys being at greater risk for developing conflictual TCRs, I hypothesize that male struggling readers are likely to experience greater levels of conflict with their teachers compared to female struggling readers.

- 2a. Are conflict and closeness in TCRs in the fall associated with students' end-of-year performance on the standardized literacy assessment, after controlling for struggling reader status and child-level characteristics?**

I hypothesize that above and beyond the effects of child- and teacher-level control variables, close TCRs will predict to higher spring literacy outcomes, and that conflictual TCRs will predict to lower spring literacy outcomes.

2b. Are conflict and closeness in TCRs in the fall associated with students' externalizing and/or internalizing behaviors, after controlling for fall behavior scores and child-level characteristics?

I hypothesize that close TCRs will predict to lower levels of externalizing and/or internalizing behaviors, and that conflictual TCRs will predict to higher levels of externalizing and/or internalizing behaviors.

2c. Are there gender and struggling reader differences in the associations between TCRs and children's literacy outcomes and/or behavioral difficulties?

Although there is currently little empirical evidence about gender and struggling reader differences, I hypothesize that compared to girls and non-struggling readers, boys and struggling readers will experience stronger associations between TCRs qualities and literacy achievement and/or behavioral difficulties.

Methods

The current study used data from the Department of Education's Institute of Education Sciences-funded randomized controlled trial (RCT) of the Targeted Reading Intervention (TRI) study. This RCT was conducted during the 2011-2012, 2012-2013, and 2013-2014 school years in ten Title I elementary schools across three rural school districts. Approximately 64% to 87% of students were eligible for free or reduced-priced lunch. The schools received Title I funding, which indicated that the school districts served high concentrations of children from low-income families. In Title I schools, at least 40% of the school population are from low-income families (U.S. Department of Education, 2015). Only the sample of kindergarten and first grade control teachers and students were included in order to eliminate confounds of the literacy coaching professional development (TRI) delivered to the treatment teachers ($n = 67$).

Sample

Teachers. The total sample of teachers in the control group ($n = 52$) from the RCT was included in the present study. Teachers who were a part of the control group received a laptop or iPad and a computerized mathematics curriculum, Building Blocks (Clements & Sarama, 2007).

Students. In the study, all students (treatment and control) were initially screened using grade-appropriate subtests from AimsWeb (Shinn & Shinn, 2002) and the Dynamic Indicators of Basic Early Literacy Skills–6th Edition (DIBELS). AimsWeb and DIBELS benchmarks, based on grade and fall time point, were used as a screening instrument to categorize all students (treatment and control) as a *struggling reader* or as a *non-struggling reader*. Kindergarten students were screened using the AimsWeb Letter Sound Fluency (LSF) and DIBELS First Sound Fluency (FSF) subtests. First grade students were screened using the DIBELS Phoneme Segmentation Fluency (PSF) and Nonsense Word Fluency (NWF) subtests. Grade-level and fall time point Aimsweb/DIBELS benchmarks were used to categorize all students as being at *high risk*, *some risk*, or *low risk* for reading difficulties. Then, within-classroom comparisons were created to determine if students who struggled with reading and received the intervention could “catch up” to their non-struggling peers. Three students from both the *high risk* and *low risk* groups were randomly selected and then their struggling status was confirmed by additional assessment on two subtests (Letter-Word Identification and Word Attack) of the Woodcock Johnson Diagnostic Reading Battery, III (WJ; Woodcock, Mather, & Schrank, 2004). Consented students who were identified as *high risk* on DIBELS subtests were required to score below 35% on the grade percentile score of one or both WJ subtests to be selected as a *struggling reader*. Consented students who were identified as *low risk* on DIBELS subtests were required to have an average grade percentile score on both subtests greater than 50%, with neither subtest falling

below 35% to be selected as a *non-struggling reader*. In the classrooms that did not have sufficient numbers of consented *low risk* and/or *high risk* students, or congruent DIBELS-WJ student scores, consented students from the *some risk* group were tested and further classified as *struggling* or *non-struggling* based on their WJ scores, as described above. Optimally, three struggling readers and three non-struggling readers were selected from each classroom.

The final sample of students across the three-year study yielded a total of 1108 students in both the treatment and control conditions. The current study, however, only focuses on students in the control condition ($n = 503$).

Measures and Procedures

Data were collected by assessors (graduate students or former teachers) who attended training sessions over a two-day period, during which they completed a full battery on a non-participating child or with the Research Coordinator in order to become certified. The Research Coordinator then scored and evaluated the full assessment to ensure reliability. Trainings with distance assessors were conducted on site and then followed up via online communication and video conferencing. Assessments were administered in the fall and spring of each study year. All child assessments were administered in a quiet area in the schools and all assessments were conducted in English. Online and paper forms were distributed to teachers in order to obtain information about teachers' professional background and child-specific behaviors or knowledge. Teachers typically completed these forms within two weeks of receipt and they received a small stipend (\$50) upon completion of these forms.

Literacy skills. In the fall and spring of each study year, research assistants assessed children on the Woodcock Johnson Diagnostic Reading Battery, III (WJ III; Woodcock, Mather, & Schrank, 2004). To children's literacy scores, I created a composite score, Basic Reading

Skills, by using the *w* scores for two of the WJ subtests (Letter-Word Identification and Word Attack). The *w* score is metric derived from the transformation of the Rasch model and it represents an equal-interval scale to capture equivalent differences in literacy scores (Jaffe, 2009). Collectively, these assessments measured children's skills in word-identification and applying phonic and structural analysis to the pronunciation of unfamiliar printed sounds. The median reliability between the two subtests is .89 (Woodcock et al., 2004).

Child behaviors. In the fall and spring of the academic year, teachers completed the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001). The SDQ is a norm-referenced behavior rating scale that consists of 25-items. This measure is designed to assess risk for behavioral difficulties in children between the ages of 3 and 17. In the current study, two subscales were used: (a) Conduct Problems (e.g., *Often loses temper*) and (b) Emotional Symptoms (e.g., *Many worries or often seems worried*). The Conduct Problems subscale was used to measure children's externalizing behaviors and the Emotional Symptoms subscale was used to measure children's internalizing behaviors. There were five corresponding items for the two subscales. All items were scored using a three-point Likert-type scale (not true = 0, somewhat true = 1, certainly true = 2), with scaling reversed for negatively phrased items and subscale ranges of 0-10. For the Conduct Problems subscale, $\alpha = 0.72$ and for the Emotional Symptoms subscale, $\alpha = .73$. Children's teacher-rated scores (0-10) on the two subscales in the spring were used in the analysis, after controlling for the fall scores on the two subscales. For Externalizing Behaviors, the categorization of scores is: 0-2 = *Normal*, 3 = *Borderline*, 4-10 = *Abnormal*. For Internalizing Behaviors, the categorization of scores is: 0-4 = *Normal*, 5 = *Borderline*, 6-10 = *Abnormal*.

Teacher-child relationships. In the fall and spring of the academic year, teachers completed the short form of the Student-Teacher Relationship Scale (STRS; Pianta, 2001). STRS consists of 15 items that assess the quality of relationships between students and teachers across two primary domains: *Closeness* (7 items; e.g., *I share an affectionate, warm relationship with the child*) and *Conflict* (8 items; e.g., *This child and I always seem to be struggling with each other*). Teachers rated students across these two domains, using a five-point Likert-type scale (definitely does not apply = 1, not really = 2, neutral, not sure = 3, applies somewhat = 4, and definitely applies = 5). Children's teacher-rated fall scores (0-5) were used in Research Questions 2-4.

Covariates. The inclusion of certain covariates in analyses that have been predictive of children's literacy achievement, behaviors and TCRs is well documented throughout the literature (e.g., Gallagher et al., 2013; Hamre & Pianta, 2005). Among these, researchers have found children's *race* (0 = White, 1 = Black) and *SES* (*z* score) to be important predictors of children's behaviors and/or literacy outcomes, especially within the context of examining effects of TCR. The socioeconomic status (SES) variable was created by transforming *family income* and *maternal education* into *z* scores and then averaging these scores. *Family income* levels were coded on ordinal variables, for which there were five increments of \$20,000 (e.g., 0 = 0-\$20,000, 1 = \$20,000-\$40,000, 2 = \$40,000-\$60,000). *Maternal education* was also coded as a continuous variable, where there were four possible categories (e.g., 0 = no high school diploma, 1 = high school graduate, 2 = Associate's degree or some college, 3 = Bachelor's degree or higher). The *z* scores of children's family *socioeconomic status* averaged zero (*SD* = .86).

In addition, children's *fall scores* on the externalizing and internalizing SDQ subscales were included to restrict the models to behavioral development across the school year. The

following teacher-level variables were also included in analyses: *teacher education*, *teacher experience*, and *teacher race*. *Teacher education* (0 = Bachelor's degree, 1 = Master's degree or higher) and *experience* (< 3 years, 3-5 years, 6-10 years, 11-20 years, and > 20 years) were also included given prior research that documents these teacher-level characteristics as related to children's literacy (Connor, Son, Hindman, & Morrison, 2005) and behavioral development. Finally, teacher race was included as a categorical dummy variable (0 = White, 1 = Black), given researchers' hypotheses that teachers' race may contribute to negative biases or stereotypes towards minority children and may thereby negatively impact their relationships with their students.

Moderators. In this analysis, children's struggling status and child gender were included as moderators (Research Question 2c). Struggling status and child gender were included as categorical dummy variables (0 = non-struggler, 1 = struggler; 0 = female, 1 = male).

Method of Analysis

All analyses were conducted using SAS v. 9.3. Across all the variables, missingness ranged from 0-15%. Multiple imputation procedures were used to account for missing data and to avoid inaccurate regression estimations (Berglund, 2010; Rubin, 1987). In multiple imputation procedures, multiple datasets ($n = 20$) are generated in an iterative fashion to realistically model the linear relationships among the variables (Shafer & Graham, 2002). The values from these datasets were then aggregated to yield the best estimates of the relationships between variables with no missing data. The PROC MIANALYZE function in SAS v. 9.3 was used to aggregate the model parameters across the imputed datasets. The imputation models included all of the fall and spring assessment scores, child race, child gender, teacher education, teacher experience, socioeconomic status, and the conflict and closeness subscales; additionally,

auxiliary variables, which had high correlations with the explanatory variables, were included to improve the imputation models (Enders, 2010).

In the first research question, I examined how struggling reader status, fall behavior scores, child race, SES, and gender predicted to conflict and closeness in the spring. In the second research question, I explored how closeness and conflict in TCR in the fall predicted to students' end-of-year Basic Reading Skills (Research Question 2a), externalizing behaviors (Research Question 2b), and internalizing behaviors (Research Question 2b). In the third research question, I explored moderation effects for gender and struggling reader status on the associations between TCRs and children's literacy achievement and behavioral outcomes. I created separate models for internalizing and externalizing behaviors, which resulted in a total of eight regression models. Two-level hierarchical models (HLM) were used to account for the nesting of children within classrooms (Raudenbush & Bryk, 2002). First, I used unconditional models to describe change in literacy given fall scores for the i -th child in the j -th classroom, with random error terms for the classroom (u_{0j}) and students (r_{ij}). In the notation below, fixed effects are represented by gammas (γ). I included students' fall behavior scores (externalizing behaviors and internalizing behaviors) to account for pre-existing, entry-level differences.

$$\text{Unconditional Model: Spring Score}_{ij} = B_0 + B_1 \text{ Fall score}_{ij} + r_{ij} + u_{0j}$$

Note: Spring Score refers to children's literacy and behavior outcomes (which will be examined separately).

At level one, I included fixed effects for child-level variables: gender, race, socioeconomic status, conflict, closeness, and struggling reader status. At level two, I included teachers' levels of education and total years teaching. The continuous predictors were centered for analyses, which yielded regression coefficients that represented the change in the dependent

variables based on a 1-unit increase above the mean for the predictor variable. Effect sizes were calculated using Cohen's *d* (Cohen, 1988).

Reduced form equation:

$$\text{SpringChildOutcomes}_{ij} = [\gamma_{00} + \gamma_{01}(\text{trace})_j + \gamma_{02}(\text{ted})_j + \gamma_{03}(\text{tex})_j + \gamma_{10}(\text{fastrs})_{ij} + \gamma_{20}(\text{strugglingstatus})_{ij} + \beta_{3j}(\text{childcovariates})_{ij}] + [r_{ij} + u_{0j} + u_{1j}(\text{fastrs})_{ij} + u_{2j}(\text{strugglingstatus})_{ij}]$$

The third research question examined whether or not there were moderation effects for child gender and struggling reader status. I created separate interaction terms for gender and struggling reader status and TCR for each of the child outcomes.

Results

Descriptive Findings

Demographic information and descriptive statistics on the final sample of students ($n = 503$) are available in Table 1. Of the total sample, about 287 (57%) students were in kindergarten and 216 (43%) students were in first-grade. Approximately 203 (40%) students were White and 300 (60%) students were African American and approximately 50% of students were boys. The SES *z* scores across this sample ranged from -2.05 to 2.57.

On the Externalizing Behaviors composite, the average rating for children was 1.01 ($SD = 0.90$) and on the Internalizing Behaviors composite, the average rating for children was 0.56 ($SD = 0.68$). Children in this sample primarily fell within the *Normal* categorization (0-2 for Externalizing Behaviors and 0-4 for Internalizing Behaviors) of both Externalizing and Internalizing Behaviors, suggesting that teachers did not perceive children to exhibit significant behavioral difficulties within the classroom. Children were rated an average of 1.64 ($SD = 0.96$) and 4.25 ($SD = 0.66$) on the Conflict and Closeness scales, respectively. Overall, teachers reported lower levels of conflict and higher levels of closeness with their students.

Table 2 provides descriptive information on the teachers included in the study ($n = 52$). In the sample, 34 teachers reported less than 3 years of teaching, highlighting issues of teacher turnover and limited teaching experience within the classroom. About half (58%) of teachers had more than five years of experience teaching. Of the total sample, approximately 28 (54%) were kindergarten teachers and 24 (46%) were first-grade teachers. Approximately 34 (65%) had earned a Bachelor's degree and 18 (35%) teachers had earned a Master's degree or higher. In terms of teachers' race, 78% of the teachers were White and 22% of teachers were African American.

Research Question 1: Struggling Reader Status and Teacher-Child Relationships

The first research question examined whether or not children's struggling reader status was related to spring conflict and closeness, after controlling for child gender, race, and SES. Of the demographic variables, child gender was significantly related to spring conflict ($B = 0.31, p < .001$). As seen in Table 3, results showed that after controlling for child gender, race, and SES, struggling reader status was significantly related to the level of conflict that teachers perceived in their relationships with students ($B = 0.16, p = .04, d = 0.19$) as well as to the level of closeness that teachers perceived in their relationships with students ($B = -0.12, p = 0.03, d = -0.18$). Post hoc analyses showed that there were no significant interaction effects with struggling reader status and gender for conflict or closeness, respectively ($B = -0.15, p = 0.34; B = 0.03, p = 0.78$).

Research Question 2a: Teacher-Child Relationships and Literacy Outcomes

As seen in Table 4, none of the child or teacher control variables significantly predicted to children's literacy achievement. Struggling reader status negatively predicted to children's literacy achievement ($B = -29.09, p = .03$). Teacher-rated conflict was significantly associated with children's spring literacy achievement ($B = -3.52, p = .01, d = -0.10$), but teacher-rated

closeness was not significantly associated with children's spring literacy achievement ($B = 2.86$, $p = .09$).

Research Question 2b: Teacher-Child Relationships and Externalizing/Internalizing Behaviors

Externalizing behaviors. In this model, one control variable was significant (gender, $B = 0.17$, $p = .004$). Struggling reader status was significantly associated with increases in children's externalizing behaviors ($B = 0.13$, $p = 0.03$). None of the teacher characteristic variables were significantly associated with higher teacher ratings of children's externalizing behaviors. When teachers reported conflictual relationships with their students in the fall, children were more likely to be rated as having externalizing behaviors in the spring ($B = 0.13$, $p = 0.008$, $d = 0.14$), after controlling for initial levels of externalizing behaviors. Closeness was not significantly related to children's externalizing behaviors.

Internalizing behaviors. As in the externalizing behaviors model, struggling reader status was a significant predictor of children's internalizing behaviors ($B = 0.12$, $p = .01$). None of the control variables related to child or teacher characteristics were significantly related to children's internalizing behaviors. Conflictual relationships between teachers and children were significantly related to children's internalizing behaviors ($B = 0.18$, $p < .001$, $d = 0.28$). The closeness subscale was not significantly related to children's internalizing behaviors.

Research Question 2c: Moderating Effects of Struggling Reader Status and Gender

The fourth research question aimed to understand moderation effects for gender and struggling reader status, and there is utility of probing both significant and non-significant findings for possible interaction effects (Aiken & West, 1991). For literacy achievement, there were no moderating effects of child gender or struggling reader status with fall conflict ($B = -$

2.52, $p = .27$; $B = -1.51$, $p = 0.44$) or with fall closeness ($B = 5.49$, $p = .05$; $B = 2.55$, $p = .37$).

Similarly, for externalizing behaviors, there were no moderating effects of child gender or struggling reader status with fall conflict ($B = -0.05$, $p = 0.45$; $B = 0.11$, $p = 0.07$) or with fall closeness ($B = 0.03$, $p = 0.71$; $B = -0.07$, $p = 0.43$). This was true also for internalizing behaviors and fall conflict ($B = -0.10$, $p = 0.09$; $B = -0.00$, $p = 0.97$) as well as with internalizing behaviors and fall closeness ($B = 0.13$, $p = 0.09$; $B = 0.03$, $p = 0.64$).

Discussion

The primary goal of this study was to assess whether or not TCRs were associated with literacy and behavioral outcomes, specifically focusing on if, and how, struggling readers benefitted from these associations. This study extends previous research, which has primarily focused on predominantly older elementary school students (e.g., McCormick & O'Connor, 2015), by focusing on a sample of diverse rural children and a subset of children who were identified as struggling readers. Additionally, the current study distinguishes between children's behaviors by examining externalizing and internalizing behaviors separately.

I began by reviewing evidence about the two primary research questions that guided the current study. First, I found that teachers were more likely to report greater levels of conflict and lower levels of closeness with their struggling readers, after controlling for children's behavioral difficulties and demographic characteristics. Second, I found that conflictual TCRs were significantly and negatively associated with children's literacy achievement and that conflictual TCRs were significantly associated with children's internalizing and externalizing behaviors. Third, I did not find evidence of struggling reader status to significantly moderate the associations between TCRs and children's literacy achievement and behavioral outcomes;

although I found significant interaction effects by gender and close TCRs on children's literacy achievement, the slopes for both girls and boys were non-significant.

TCR and Literacy Outcomes

In the empirical analyses, I found that conflict, but not closeness, was significantly associated with children's spring literacy achievement. I detected, however, a small effect for the associations between conflict and children's literacy achievement ($d = .10$). Conflictual relationships, as perceived by the teacher, indicate that the teacher may feel ineffective working with a particular student or that the teacher is emotionally drained or fatigued from working with the student (Pianta, 2001). I found this teacher-based perception to be negatively associated with children's reading achievement, above and beyond the effects of children's demographic characteristics and struggling reader status. It is possible that when teachers perceive conflict in their relationships with students, teachers may withdraw support from the child or may engage less frequently with the child in classroom activities, thereby limiting opportunities for the child to develop literacy skills. I was surprised that I did not find significant associations between close TCRs and children's literacy achievement. Although there is some support for close TCRs and children's literacy achievement (e.g., Lee & Bierman, 2015; McCormick & O'Connor, 2015), findings from our study corroborate some of the work that has found relational negativity to be a more salient predictor of children's achievement compared to closeness between teachers and children (Hughes, 2012). Overall, it is worth noting that the teachers in the current study reported higher levels of closeness with students. It is possible that in rural schools, teachers and children may simply share more positive relationships and that relationships characterized by conflict may be less typical; accordingly, conflictual TCRs may bear more consequence on children's literacy achievement.

TCRs and Behavioral Outcomes

Findings from this study provide evidence that there are significant associations between TCRs and children's internalizing and externalizing behaviors. This study was one of the few to differentiate between the two types of behaviors and significant associations emerged despite the fact that a majority of children were not identified as having clinical levels of behavioral difficulties. Closeness was not significantly related to children's internalizing or externalizing behaviors. On the other hand, teacher-rated conflict was related to higher levels of teacher-rated externalizing and internalizing behaviors within children; in our study, however, I found small effect sizes for the associations between conflictual TCRs and behavioral outcomes ($d = .14$ and $.28$). Teachers often feel unprepared to handle behavioral challenges within the classroom (Cassidy, Woodhouse, Sherman, Stupica, & Lejuez, 2011), and findings from this study show that when teachers perceive greater levels of conflict with their students, teachers may also perceive greater externalizing and internalizing behaviors within those children. This process, however, is likely to be bidirectional. That is, teachers may be more likely to perceive conflictual relationships with children who exhibit behavioral difficulties, and teachers may also be likely to perceive greater instances of behavioral difficulties when they experience conflictual relationships with those children. Teachers may experience greater levels of frustration or stress when working with these children and they may even view those children as "less teachable" (Keogh, 2003), which may contribute to perceptions of conflict. It is possible that children may, for example, act out more (externalizing behaviors) or withdraw from classroom activities (internalizing behaviors) because they are also aware of the relational negativity. There may be greater instances of teacher reprimands or frustration that then result in children exhibiting these types of behaviors. When a teacher perceives conflict in their relationship with a specific child,

the teacher may then limit interactions, potentially leading to more aggressive or anxious behaviors. Behavioral challenges require teachers to expend more energy and attention; children with externalizing and internalizing behaviors may also be likely to act out during class or exhibit noncompliant behaviors that contribute to teachers' perceptions of having strained relationships with these children.

Moderating Effects

I did not find significant moderation effects for TCRs and gender on children's literacy achievement or behavioral outcomes. However, like other studies conducted in this area, this study did not find evidence of associations between TCRs and literacy achievement to vary by gender (e.g., Hughes, 2012; McCormick & O'Connor, 2015; Wolter, Gluer, & Hannover, 2014). It is possible that other child-level characteristics may have stronger moderating effects on children's literacy achievement. Additionally, I found no significant moderation effects for qualities of TCRs and gender on children's externalizing and internalizing behaviors. In this sample of students, boys and girls did not exhibit clinically significant behavioral difficulties; it is possible that in a sample of clinically significant behavioral difficulties, relational negativity may exacerbate children's behavioral problems, whereas close TCRs may help to minimize the behavioral difficulties.

Findings from this study also suggest that although teachers may perceive more conflictual relationships with struggling readers, conflictual relationships may not necessarily exacerbate struggling readers' literacy development or behavioral difficulties. I found no significant moderation effects for struggling readers and TCRs in their literacy achievement and behavior outcomes. This finding was especially surprising considering that struggling readers are at heightened risk for behavioral difficulties (Morgan et al., 2008). Findings from this study

suggest that conflict may not have stronger effects for struggling readers than for non-struggling readers in relation to literacy achievement or behavioral outcomes. It is possible that for struggling readers, conflictual TCRs may have adverse effects on other areas such as self-esteem or engagement, which may then lead to more long-term reading and behavioral difficulties (as shown in studies by Hughes and colleagues, 2007; 2008). Nevertheless, there is preliminary evidence that struggling readers are at greater risk for developing conflictual relationships with their teachers. What remains unknown, however, are the impacts of these relational difficulties. The findings also suggested that teachers were less likely to perceive close relationships with struggling readers compared to non-struggling readers. As with conflict, I did not find moderating effects of closeness for struggling readers on literacy and behavioral outcomes. It is possible that for struggling readers, close TCRs may have impacts on other child-specific behaviors (e.g., engagement, motivation to engage in literacy-based activities) that were not measured in the current study.

Limitations

Like other empirical studies, this study is bound by certain limitations. First, the STRS and SDQ are teacher reported measures; consequently, teacher ratings on these measures are prone to teacher biases. Other researchers, however, have shown that both measures are reliable and valid, and both measures are extensively used in studies of TCRs (e.g., Pianta, 2001) and behavioral difficulties (e.g., Goodman, 2001; Goodman, Lamping, Ploubidis, 2010). Furthermore, teacher perceptions of relationship quality are important because teachers often responsible for negotiating their relationships with students, particularly in elementary school. Likewise, teachers' perceptions of children's behavioral difficulties are also important, considering that teachers spend a considerable amount of time with these students and they may

have the best understanding for how these students behave within the classroom. Nevertheless, future studies may consider including child or observer ratings of TCRs and behavioral difficulties to issues of teacher bias. Second, this study does not allow us to make causal inferences for the impact of TCRs on children's outcomes. Studies using experimental or quasi-experimental designs may allow for a deeper understanding of TCR effects on child outcomes. Quasi-experimental research designs (e.g., PSM) may allow for greater understanding of the direct effects of TCRs. McCormick and colleagues (2013) used a PSM approach in their study of TCRs that may be worth replicating in other samples of teachers and children. Third, although researchers have not extensively focused on rural contexts, the findings of this study may not be generalizable to other contexts (e.g., urban, suburban). There may be teaching dynamics that differ in rural contexts that are not apparent in other settings. For instance, in the current study, there were higher levels of teacher turnover, which may be an important area to examine within these types of studies.

Future Directions

Findings from this study provide evidence that TCRs may play a role in children's development. I have identified two areas for future research based on our findings: (1) professional development and pre-service training that focuses on improving TCRs in the classroom, and (2) conceptualizing TCRs within the context of literacy-specific activities. To date, there are a few interventions that focus on developing optimal one-on-one relationships with children (e.g., Banking Time, Pianta & Hamre, 2000). Teacher educators ought to consider embedding information about these types of interventions within pre-service teacher trainings as well in professional developments for in-service teachers. Pre-service and in-service teachers still receive very little training on how to develop positive relationships with their students.

Including explicit training and specific teaching strategies for cultivating positive TCRs in teacher preparation programs may be especially prudent, particularly for teachers working in rural schools that have higher levels of teacher turnover (Monk, 2007). Additionally, teachers and children may interact differently in literacy-based activities, considering that these activities are more likely to occur within the contexts of small group or individualized instruction. A measure that captures nuances in the relationships between teachers and children during literacy activities may have more direct associations with children's literacy achievement and may be worth exploring in the future.

Conclusion

This study extends the current research on TCRs and children's literacy achievement and behavioral outcomes by being one of the few studies to include samples of struggling readers and their non-struggling peers. Findings from this study suggest that (1) struggling readers are more likely to experience conflict with their teachers, and that (2) conflictual TCRs have significant and negative associations with children's externalizing and internalizing behaviors. Children's struggling reader status and gender were not found to have moderating effects on the association between TCRs and children's literacy and behavioral outcome. Overall, findings suggest that TCRs may be important social resources that allow children to develop competencies that allow them to navigate schooling challenges during the early elementary school years. TCRs may be entry points that can be used to improve children's learning. Although future work in this area is certainly needed, the research thus far is clear – TCRs matter for children and we ought to be more conscientious of the qualities of TCRs that our vulnerable children experience in schools.

Table 3.1 *Descriptive Information for Student Sample (N = 503)*

	<i>Students</i>				
	N	% or <i>M</i>	<i>SD</i>	Range	
Grade (% first grade)	503	43.74	0.50	0.00	1.00
Child gender (% male)	503	50.05	0.50	0.00	1.00
Child race (% Black)	503	60.24	0.49	0.50	1.00
Family SES	497	-0.08	0.86	-2.05	2.43
Maternal Education					
No HS Diploma	104	21.14			
HS Diploma	113	22.97			
Associates Degree	208	42.28			
Bachelors Degree	67	13.62			
Family Income					
<= \$20,000	259	55.34			
\$20,001-\$40,000	113	24.15			
\$40,001-\$60,000	46	9.83			
\$60,001-\$80,000	24	5.13			
> \$80,000	26	5.56			
Struggling status (%)	503	0.50	0.50	0.00	1.00
STRS Conflict, fall	427	1.64	0.96	1.00	5.00
STRS Closeness, fall	427	4.25	0.66	1.50	5.00
Literacy Achievement, spring	473	450.91 (SS = 105.73)	23.72	365.50	505.25
Externalizing behaviors, fall	427	1.01 (Normal)	0.90	0.00	3.60
Externalizing behaviors, spring	459	1.03 (Normal)	0.92	0.00	3.20
Internalizing behaviors, fall	427	0.56 (Normal)	0.68	0.00	3.20
Internalizing behaviors, spring	459	0.59 (Normal)	0.66	0.00	3.80

Note. STRS Conflict = Student Teacher Relationship Scale, Conflict subscale; STRS Closeness = Student Teacher Relationship Scale, Closeness subscale; Literacy Achievement = Composite of Woodcock Johnson III Subtests (Letter-Word Identification and Word Attack); SS = Standard Score. Normal (externalizing behaviors) = 0-2; *Borderline* = 3, *Abnormal* = 4-10; Normal (internalizing behaviors) = 0-4; *Borderline* = 5; *Abnormal* = 6-10.

Table 3.2. *Descriptive Information for Teacher Sample* (N = 52)

	N	% or <i>M</i>	<i>SD</i>	Range	
Teacher race (% Black)	51	21.14	0.42	0.00	1.00
Teacher education (% Masters or Above)	52	35.10	0.48	0.00	1.00
Teacher experience (5 years or above)	52	62.62	0.48	0.00	1.00

Table 3.3 *Regression findings predicting struggling status to STRS Conflict and Closeness (N = 503)*

Model	STRS Conflict		STRS Closeness	
	<i>B</i>	SE	<i>B</i>	SE
Intercept	1.38	0.10	0.36	0.23
Male	0.31 ^{***}	0.08	0.19 ^{**}	0.06
Black	0.16	0.09	0.04	0.06
Family SES	-0.05	0.05	-0.07	2.00
Struggling reader status	0.16 [*]	0.08	-0.12 [*]	0.51
<i>Model 2 – Interactions</i>				
Struggling reader status X Male	-0.15	0.16	0.03	0.12
<i>Variance Components</i>				
Level Two (Classroom)	0.18 ^{***}	0.05	0.06 ^{**}	0.02
Residual	0.65 ^{***}	0.05	0.31 ^{***}	0.02

Note: [†] $p < .10$, ^{*} $p < .05$. ^{**} $p < .01$. ^{***} $p < .001$.

Table 3.4. *Regression findings predicting to literacy achievement and behaviors (N = 503)*

	Literacy Achievement		Externalizing Behaviors		Internalizing Behaviors	
	<i>B</i>	SE	<i>B</i>	SE	<i>B</i>	SE
<i>Model</i>						
Intercept	452.58***	2.61	0.28	0.25	0.26	0.22
Male	-0.10	1.51	0.17**	0.06	-0.04	0.05
Black	-0.52	1.66	0.04	0.06	-0.02	0.06
Family SES	3.34	0.92	-0.06	0.03	-0.02	0.03
Struggling status	-29.09*	1.90	0.13*	0.06	0.15**	0.05
Teacher race (1 = Black)	-1.31	2.76	0.18	3.67	0.25*	0.11
Teacher education level	7.47	2.41	0.03	0.10	0.09	0.09
Teacher experience	-3.76	2.26	0.07	0.10	0.05	0.09
Externalizing behaviors, fall	-	-	0.66***	0.05	-	-
Internalizing behaviors, fall	-	-	-	-	0.31***	0.06
STRS Conflict, fall	-3.52**	0.94	0.13**	0.05	0.17***	0.04
STRS Closeness, fall	2.86†	1.31	0.06	0.05	-0.01	0.05
<i>Model 2 - Interactions</i>						
STRS Conflict x Struggling status	-1.51	1.93	0.10†	0.06	0.00	0.05
STRS Closeness x Struggling status	2.55	2.82	-0.07	0.09	0.03	0.08
STRS Conflict x Male	-2.52	2.28	-0.05	0.06	-0.10†	0.06
STRS Closeness x Male	5.49†	2.90	0.03	0.09	0.13†	0.08
<i>Variance Components</i>						
Level Two (Classroom)	268.95***	11.50	0.06**	0.02	0.06**	0.02
Residual	329.53***	15.86	0.31***	0.02	0.24***	0.02

Note: † $p < .10$, * $p < .05$. ** $p < .01$. *** $p < .001$. Literacy achievement is comprised of the Letter Word Identification and Word Attack subtests of Woodcock Johnson (Woodcock, Mather, & Schrank, 2004). Externalizing behaviors was measured by the Conduct Problems subscale from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001). Internalizing behaviors was measured by the Emotional Symptoms subscale from the SDQ (Goodman, 2001). STRS = Student-Teacher Relationship Scale (Pianta, 2001).

CHAPTER 4: CLASSROOM QUALITIES AS CONTEXTS FOR TEACHER-CHILD RELATIONSHIPS: FOR WHOM DO THEY MATTER?

Introduction

Aside from the home environment, young children spend a majority of their time within classroom environments. In fact, during the early years of elementary school, children spend a significant amount of time with one teacher, making children especially sensitive to their classroom experiences. Teachers not only establish the overall qualities of classroom environments, but they also negotiate the individual relationships that they form with their students. Teacher-child relationships (TCRs) are important social resources for young children and researchers have linked qualities of TCRs to a variety of child outcomes. Currently, however, studies on roles of classroom qualities and qualities of TCRs have diverged into two separate lines of research, with very little research connecting these two aspects of classroom environments. Since researchers have found that classroom qualities and TCRs independently contribute to children's learning and educational experiences, it is important to understand how classroom qualities facilitate or hinder the development of TCRs. Classroom qualities may have direct and important implications for the types of relationships (i.e., close or conflictual) that teachers form with their students. High-quality classroom environments can create cultures that encourage teachers and children to develop positive relationships, even when accounting for children's learning and behavioral difficulties (Brown et al., 2010). Classroom environments are unique and important systems that provide structures for the development of TCRs with individual children.

Teachers are not only tasked with cultivating optimal learning environments, but are also tasked with delivering high quality instruction that is responsive to their students' varying needs. Child-level attributes such as gender or entry-level literacy skills may further complicate how teachers are able to create classroom environments that can support positive relationships with individual students. Lower quality classroom environments may impede children's abilities to readily capitalize on relationships with their teachers, which may be especially detrimental for children who struggle to read. In low quality classroom environments, it may be especially difficult for struggling readers to form positive relationships with their teachers, which may, in turn, adversely affect struggling readers' learning opportunities (Hoglund, Klinge, & Hosan, 2015; Locasale-Crouch et al., 2007). In addition, differences between boys and girls have been long noted throughout research on TCRs, yet there has been a very limited focus on gender differences in research on classroom quality. The qualities and structures of classroom environments that support the development of TCRs may vary based on gender; girls may be more sensitive to relational supports within the classroom, while boys may benefit more from classrooms with predictable routines or strong organization (Garwood, Vernon-Feagans, & the Family Life Project Key Investigators, 2016). To that end, the current study is designed to depict a nuanced view of classroom quality and TCRs, while maintaining a specific focus on a) struggling readers and b) gender differences.

Ecological Systems Theoretical Framework

Bronfenbrenner's (1999) ecological systems theory provides a useful framework for understanding classroom quality and TCRs. Specifically, an ecological systems theory framework situates the study of TCRs as proximal processes that are dependent on the quality of the classroom environment. The ecological systems framework operationalizes a process-

person-context-time model to elucidate the complex interactions among various systems (e.g., microsystems such as schools, or macrosystems such as the interplay between schools and homes). Proximal processes refer to the recurring interactions between the developing individual and other individuals in the surrounding environment (Bronfenbrenner & Morris, 1998). Proximal processes are dependent on the individual's characteristics as well as the characteristics of the environment, social conventions, and time period (Bronfenbrenner & Morris, 1998). Proximal processes primarily exist within the microsystem, which encompass activities and relationships in which the student directly participates; proximal processes are likely to have the greatest influence on students (Bronfenbrenner, 1986; Vernon-Feagans, Odom, Pancsofar, & Kainz, 2007).

Person-level characteristics also play important roles in the interactions between students and teachers. Bronfenbrenner proposed three types of individual characteristics: demand, which are demographic based characteristics; resource, which describe individuals' prior skills and experiences; and force, which describe individual's temperament, motivation, and persistence (Tudge, Mokrova, Hatfield, & Karnik, 2009). Contexts are nested systems that include microsystems (activities and relationships within an immediate environment), mesosystems (the links between two microsystems), exosystems (links between systems, one of which does not include the individual's immediate environment, but indirectly influences the individual), macrosystems (underlying culture, customs, belief systems, etc. that influence all of the systems), and chronosystems (individuals' change over time and historical time period; Bronfenbrenner, 1994). Individuals' outcomes are a product of processes, contexts, and individual effects, all of which play crucial roles in influencing individuals' outcomes (Vernon-Feagans et al., 2007). Although mesosystems (e.g., connections between schools and home

environments), exosystems, macrosystems, and chronosystems are important contexts that influence children and teachers, it is beyond the scope of the current study to focus on the influences of those contexts. Rather, the current study focuses on the microsystem (i.e., classroom environment), the processes that unfold within this context, and person-level characteristics (specifically demand and resource).

Researchers have also decomposed classroom quality into structural and process features. Process features are captured by global dimensions of various interactions that occur within the classroom. Process features can encompass interactions between students as well as interactions between students and teachers (Bretherton & Munholland, 2008). Researchers conceptualize process features as relational (e.g., sensitively interacting with a child) and/or instructional (e.g., modeling an activity), both of which are distinctly important for children's learning. TCRs are important process features that are likely an outcome of high quality classroom environments. Process features typically encompass the transactional and proximal interactions between teachers and children (Bronfenbrenner & Morris, 1998; Pianta et al., 2008). Structural features of the classroom environment also have important implications for other learning processes within the classroom. Structural features of classrooms describe features such as teacher characteristics (e.g., experience, education) or classroom characteristics (e.g., student:teacher ratio). When structural features meet specific standards (e.g., teachers have obtained a Bachelor's degree), classrooms maintain a baseline level of quality that yields to more favorable student outcomes (Pianta et al., 2008). Bretherton & Munholland (2008) describe structural indicators as those that can be regulated through state regulatory or licensing processes (e.g., number of students per classroom, teacher salaries). Unlike process features, structural features do not describe interactions between individuals within the classroom; rather, structural features

typically describe more distal processes that influence the quality of classroom environments (Bretherton & Munholland, 2008); Pianta et al., 2008).

An application of the ecological systems framework would suggest that process factors, such as TCRs, may be proximal mechanisms that are continually influenced by structural features such as teacher-, child-, or classroom-level characteristics (Pianta et al., 2008). For example, small class sizes and smaller child-teacher ratios may be more conducive to providing high quality social and instructional interactions, thereby creating a higher quality classroom environment (Mashburn et al., 2008). Person-based characteristics, such as teacher demographics, may have indirect influences on the quality of the classroom environment; for example, teachers' education and experience may influence children's development in that teachers with more education and experience may engage in stronger instructional and social interactions with their students, thereby positively impacting children's development (Mashburn et al., 2008; NICHD ECCRN, 1996).

During the early elementary years, teachers are responsible for a variety of demands such as providing instructionally appropriate instruction, developing relationships with children, and managing their classrooms (Ponitz et al., 2009). This may be an especially challenging task for teachers who work with struggling readers (Rimm-Kaufman, Pianta, & Cox, 2000). High-quality classroom environments may buffer the challenges of working with struggling readers. This is because within high-quality classrooms, teachers are able to positively interact with children and support children's learning in engaging and stimulating ways (Perry et al., 2002). Unlike low-quality classrooms, high-quality classrooms are likely to provide more opportunities for teacher and students to develop supportive relationships with each other (Ponitz et al., 2009).

Domains of Classroom Quality

In recent studies, researchers have used the Classroom Assessment Scoring System (CLASS) to focus on three domains within classroom quality: emotional support, classroom organization, and instructional support. Each domain is posited to be an important pathway that affects a variety of processes within the classroom, ultimately impacting students' learning. In the following sections, I describe how each of these domains uniquely facilitates the optimal development of close or conflictual TCRs.

Emotional Support

Emotional support describes the degree to which teachers foster positive interactions among students and generally encompasses: (a) teacher sensitivity, which is the extent to which teachers respond to students and are aware of students' academic and emotional needs; (b) positive climate, which is the level of enthusiasm that teachers and students have for learning and the positive relationships that teachers and children have with each other; and (c) regard for students' perspectives, which is the extent to which teachers differentiate or adapt instruction based on their students' learning needs (Curby et al., 2013; Stuhlman, Hamre, Downer, & Pianta, 2010). In emotionally supportive classrooms, teachers are attuned to children's academic and social needs (Pianta et al., 2008) and they provide richer learning opportunities for students who struggle academically. Supportive emotional climates are more likely to instill feelings of connectedness within students. When students feel connected to their teachers and peers, they may be more likely to comply with expectations for classroom behaviors and engage socially with their peers (Brackett, Reyes, Rivers, Elbertson, & Salovey, 2011; Curby et al., 2013; Jennings & Greenberg, 2009; Pianta et al., 2008).

In classrooms with positive climates, teachers encourage children to share ideas and they actively support their students (Wentzel, 2002). Teachers' emotional support is also evidenced

by warm and supportive interactions with their students across entire classrooms (Brophy-Herb, Lee, Nievar, & Stollak, 2007). Warm teacher-child interactions promote desired social behaviors, greater social competence, and improved self-regulation within children (Brophy-Herb et al., 2007). When classroom environments provide opportunities for students to acquire behavioral competencies, there may also be other spillover effects, such as lower levels of conflict with teachers and more positive relationships with peers. Emotionally supportive climates often provide a medium through which students are able to receive positive guidance from their teachers.

Although similar, emotional support is a different construct from TCRs. Emotional support captures the overall climate of the classroom and the role that teachers play in cultivating this climate, whereas TCRs embody “internal, psychological processes” that are based on a teacher’s perceptions of his or her relationship with an individual child (Buyse et al., 2008, p. 370). Sensitive and actively invested teachers who use positive affect may be more likely to generalize these feelings across children in their classrooms, enhancing the quality of emotional support they provide (Buyse et al., 2008). Although teachers who manage classrooms characterized by greater emotional support may be more likely to facilitate supportive TCRs with individual children, the two remain distinct constructs (Ahnert, Piquart, & Lamb, 2006; Buyse et al., 2008).

Classroom Organization

Classroom organization is an essential non-instructional precursor for high quality instruction (Curby, Rimm-Kaufman, & Ponitz, 2009). It is broadly characterized by teachers’ utilization of proactive approaches to manage disciplinary problems, routines and transition practices that promote stability and order, and activities that engage students (Bostock & Boon,

2012; Martin, Sass, & Schmitt, 2012; Pianta et al., 2008). Teachers who effectively manage their classrooms are able to maximize learning opportunities for students because they are able to create classroom routines, use effective transition practices, and intervene when needed (Curby et al., 2009). Lower levels of classroom organization are related to higher levels of disruptive behaviors and lower academic achievement; moreover, teachers who struggle to effectively manage their classrooms may be at greater risk for burnout (Jennings & Greenberg, 2009).

Classroom organization also creates a context for supportive TCRs. When teachers provide strong classroom organization, they are able to anticipate problematic behaviors and effectively resolve these issues. Teachers who have weaker classroom organization often experience greater levels of stress and frustration when managing behavioral problems (Howes, 2000). In addition, students who display problematic behaviors may experience greater difficulties in regulating their behaviors and difficulties in behavior regulation may even escalate in environments that are less structured and predictable, creating higher levels of chaos within the classroom. Teachers are likely to engage in more conflictual encounters with children who display behavioral challenges, straining their relationships with those children (Baker et al., 2008). On the other hand, teachers who are able to effectively manage their classrooms may be able to quickly resolve instances of behavioral difficulties and teachers' abilities to develop close and positive relationships with children are not compromised, even with children who have behavioral difficulties (Buyse et al., 2008).

Instructional Support

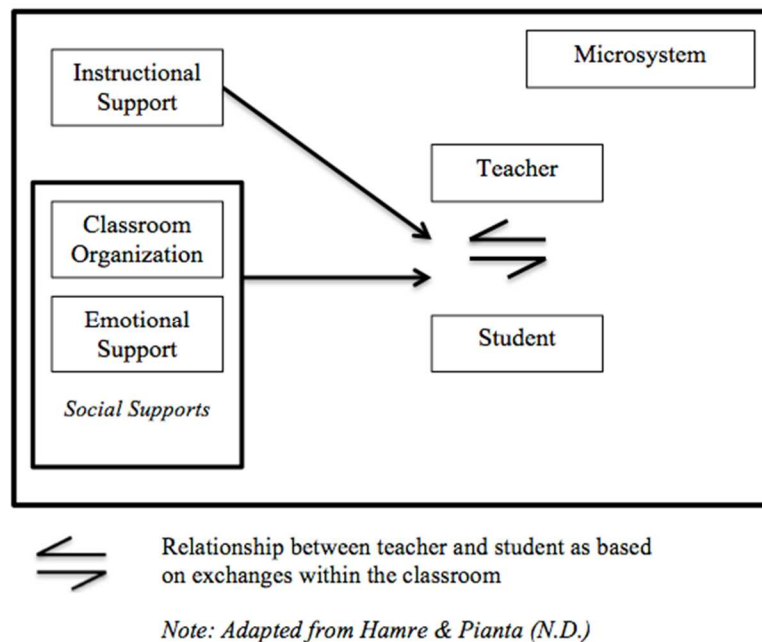
Instructional support is the third dimension of high quality classroom environments and it describes the extent to which teachers scaffold students' learning and development, provide feedback loops to guide students' learning, and create opportunities for students to learn or

review instructional content (La Paro, Pianta, & Stuhlman, 2004). When teachers provide more opportunities for students to learn specific skills and for students to receive feedback on their progress, students may experience greater growth in skills across a variety of areas (e.g., reading, writing). Teachers who provide high levels of instructional support for their students may also be more likely to provide high levels of child-centered instruction (Hamre, Hatfield, Pianta, & Jamil, 2014). Higher levels of child-centered instruction may provide more opportunities for children and teachers to develop positive relationships, as teachers who frequently problem solve and scaffold instruction may also be more attuned to their students' needs. Greater teacher sensitivity and attunement to children's needs may increase teachers' likelihood of forming closer, supportive relationships with their students. Despite the importance of instructional support for classrooms, teachers' responsiveness (composed of factors such as teacher sensitivity and positive relationships) may have a more meaningful impact on children's development and learning (Hamre et al., 2014).

Classroom-wide emotional support and classroom organization. Classroom environments that are characterized by optimal levels of social and emotional support may foster the development of positive TCRs (i.e., high levels of closeness and low levels of conflict) between teachers and individual students (Jennings & Greenberg, 2009). Although nurturing TCRs have been linked to a variety of child outcomes, such as greater motivation, peer relationships, and prosocial behaviors (Jennings & Greenberg, 2009), there is a paucity of research that examines the contexts that support optimal TCRs. Given the importance of both classroom quality and TCRs, it seems imperative to understand specifically how a combination of teachers' emotional support and classroom organization, are related to TCRs. Figure 4.1

provides a conceptual framework for how classroom quality relates to qualities of TCRs within the microsystem.

FIGURE 4.1 Conceptual Framework of Classroom Quality and TCRs



Positive relationships between young children and teachers are an integral part of effective teaching and high quality environments, both of which may be linked to a variety of student outcomes (Allen, Witt, & Wheelless, 2006). The teacher plays a vital role in influencing the quality and quantity of the micro-level interactions, or proximal processes, that take place within the classroom. These interactions, either social or instructional, are important processes that impact children academically, behaviorally, and socially. Although the overall classroom quality is typically comprised of emotional support, classroom organization, and instructional support, the current study explicitly focuses on emotional support and classroom organization as two dimensions of classroom quality that have direct impacts on TCRs. Emotional support and classroom organization primarily focus on the social interactions between teachers and children as well as the structures that undergird these social interactions within classroom environments.

A focus on these two aspects of classroom quality provides an important framework for the shared interactions between teachers and children; over time, the presence or absence of these dimensions can even influence how teachers perceive students (Brock & Curby, 2014). Consequently, the overall dynamics within classrooms can potentially allow teachers and children to capitalize on opportunities that foster positive TCRs.

Person-Level and Context-Level Influences

Child Characteristics

Although early elementary teachers are the primary negotiators of classroom quality and TCRs, I primarily focus on the influences of two child characteristics, struggling reader status and gender, as two potentially important child characteristics that can play an important role in the associations of classroom quality and TCRs. Child characteristics often influence the degree to which teachers experience challenges in the classroom environments.

Struggling Status

Children entering school with lower levels of literacy skills are more likely to exhibit behaviors that make them sensitive to classroom influences. Struggling readers are likely to experience greater academic growth when instruction is delivered within classrooms characterized by high levels of classroom quality. However, teachers are more likely to experience higher levels of frustration and a greater sense of failure when working with struggling readers, which may negatively impact teachers' emotional support in classrooms. In one of the few studies that examined associations between classroom quality and children's reading ability, Curby and colleagues (2009) found relatively mixed evidence. In their study of 147 kindergarten students, Curby and colleagues (2009) found that children who had lower literacy achievement benefitted the most from higher quality instruction, but that they

experienced greater gains in classrooms with lower levels of emotional support. The authors hypothesize that they found these associations because teachers who are emotionally supportive may be more likely to follow students' lead during instruction instead of adhering to set lesson plans. For higher achieving students, this may be beneficial, but lower achieving children may simply require more rigid instruction.

Despite this finding, I hypothesize another plausible alternative for struggling readers in classrooms with varying qualities. Lower classroom quality may reflect fewer classroom structures that contribute to struggling readers disengaging from learning tasks. Low classroom quality may also indicate an absence of other teaching practices (e.g., teacher sensitivity, predictable routines) that can contribute to more conflict between teachers and children. Struggling readers may already be at greater risk for developing conflictual TCRs because of co-occurring behavioral difficulties and low literacy skills; however, risk for conflictual TCRs may be even greater when struggling readers are in lower quality classroom contexts.

Gender

Although researchers have examined gender differences in studies of TCRs, there is, in comparison, limited understanding of associations between gender differences and classroom quality. Extant literature on TCRs suggests that teachers are more likely to perceive greater levels of conflict with their male students, and greater levels of closeness with their female students (e.g., Birch & Ladd, 1999; Ewing & Taylor, 2009). There has been little empirical work on whether or not there are unique effects of classroom quality on male and female students. For example, since girls tend to be more emotionally attuned to their teachers, girls may be more likely to benefit from positive emotional support from the classroom. Consequently, girls who experience favorable emotional support within the classroom may be more likely to understand

their teachers and thereby develop closer relationships with teachers. Boys, on the other hand, may not be as skilled at understanding emotions early on, and consequently, they may not profit as much from classrooms with more emotional support (Brock & Curby, 2014). It is also possible that other aspects of the classroom environment, such as classroom organization, may be more important for boys, given that behavioral problems tend to be more common in boys than in girls (Walker, Ramsey, & Gresham, 2004).

The Rural Context

Low-wealth elementary schools provide unique contexts for processes that can undermine or facilitate optimal classroom environments and the learning that occurs within them (Hoglund, Klinge, & Hosan, 2015). Much of the research centered on TCRs and classroom quality has been conducted outside of rural areas. A focus on the rural context is especially prudent given the numerous challenges and high likelihood of experiencing social vulnerabilities that children and teachers face in these communities. Recent findings suggest that in 2010, two-thirds of rural areas had high child poverty, compared to 47% of urban areas (Schaefer, Mattingly, & Johnson, 2016). Children who live in rural areas experience a variety of obstacles that have been linked to lower academic achievement; these obstacles include lower parental education, limited access to high-quality early childhood programs, and higher rates of poverty (Bratsch-Hines, Baker, Vernon-Feagans, 2016; Vernon-Feagans, Garrett-Peters, De Marco, & Bratsch, 2012). Children living in rural areas tend to live in higher levels of poverty and tend to live in poverty for longer periods of time (O'Hare, 2009). Moreover, not only are there disproportionate rates of minority families living in rural areas with high child poverty (Schaefer et al., 2016), but there are also more minority children who are often twice as poor as non-minority children living in the same rural areas. A corpus of research shows that minority

children living in poverty are most vulnerable to large opportunity gaps, often due to lower school readiness skills compared to their peers (Markman & Brooks-Gunn, 2005; Mulligan, Hastedt, & McCarroll, 2012).

The challenges inherent within low-wealth rural contexts are further compounded by the challenges that rural teachers face. For example, teachers working in rural areas likely have limited resources (e.g., assistants, professional development). Since rural students are less likely to enter elementary school with skills that are essential for successful academic achievement (Vernon-Feagans et al., 2010), their teachers may face greater demands in the classrooms. Limited professional development opportunities may result in less knowledge of effective instructional practices, pedagogy, or classroom management, all of which may impede teachers' abilities to create optimal classroom environments. Disparities within rural contexts may have "trickle down effects" on classroom contexts and TCRs. Rural teachers who are burdened by classroom-based demands, for example, may be likely to have lower classroom qualities or may be likely to develop strained relationships. To further understand these contexts, I used a sample of rural students and teachers to investigate nuances related to classroom quality and TCRs.

Goals of Present Study

In the present study, I examined how classroom quality was related to qualities of TCRs for early elementary school children. I further examined whether or not these associations were moderated by two specific child-level characteristics (struggling reader status and gender). This study is guided by the following research questions:

- 1. Does classroom quality predict to the end-of-year quality of TCRs (i.e., conflict or closeness)?**

I hypothesize that higher classroom quality predicts to less conflictual and close TCRs, whereas lower classroom quality predicts to more conflictual and less close TCRs.

2. Are there gender and struggling reader differences in the associations between classroom quality and TCRs?

I hypothesize that, compared to girls and non-struggling readers, boys and struggling readers will experience stronger associations between classroom quality and TCR qualities.

Methods

The current study draws upon the data from a randomized controlled trial (RCT) of the Targeted Reading Intervention (TRI) study that was funded by the Department of Education's Institute of Education Sciences; this study was conducted from 2011-2014, during the academic year. Ten Title I, rural elementary schools across three school districts participated in this large study. Approximately 64 to 87% of students were eligible for free or reduced-priced lunch. The present study will only use the sample of control kindergarten and first grade teachers in order to eliminate confounds from the literacy coaching professional development delivered to the treatment teachers in the study (for further information about the TRI study, see Vernon-Feagans et al., 2010; Vernon-Feagans, Kainz, Hedrick, Ginsberg, & Amendum, 2013). Randomization occurred at the classroom level, such that control and treatment teachers worked in the same schools.

Students

Grade-appropriate subtests from AimsWeb (Shinn & Shinn, 2002) and the Dynamic Indicators of Basic Early Literacy Skills–6th Edition (DIBELS) were used to screen students early on in the study. DIBELS benchmarks were used to categorize all students (control and treatment) in the study as a *struggling reader* or as a *non-struggling reader*. In the study,

kindergarten students were screened using the AimsWeb Letter Sound Fluency (LSF) and DIBELS First Sound Fluency (FSF) subtests. First grade students were screened using the DIBELS Phoneme Segmentation Fluency (PSF) and Nonsense Word Fluency (NWF) subtests. First, the grade-level and fall time point Aimsweb/DIBELS benchmarks were used to categorize all students as being at *high risk*, *some risk*, or *low risk* for reading difficulties. Then, students from both the *high risk* and *low risk* groups were randomly ordered to receive additional assessment on two subtests (Letter-Word Identification and Word Attack) of the Woodcock Johnson Diagnostic Reading Battery, III (WJ; Woodcock, Mather, & Schrank, 2004). To be selected as a *struggling reader*, students (who had consents) identified as *high risk* needed to score below 35% on the grade percentile score for one or both of the WJ subtests. To be selected as a *non-struggling reader*, students (who had consents) identified as *low risk* were required to have an average grade percentile score on both subtests greater than 50%, without scoring lower than 35% on both subtests. When classrooms did not have sufficient numbers of consented *low risk* and/or *high risk* students, or congruent DIBELS-WJ student scores, students from the *some risk* group were tested and then further classified these students as *struggling* or *non-struggling* based their WJ scores, as described above. At the end of the screening process, three struggling readers and three non-struggling readers were selected from each classroom.

Demographic information and descriptive statistics on the final sample of students ($n = 423$) included in the study are available in Table 4. Of the total sample, about (50%) students were in kindergarten and (50%) students were in first-grade. Approximately 178 (42%) were White and 245 (58%) were Black. The socioeconomic status (SES) variable was created by transforming *family income* and *maternal education* into z scores and then averaging these scores. *Family income* levels were coded as continuous variables, for which there were five

increments of \$20,000 (e.g., 0 = 0-\$20,000, 1 = \$20,000-\$40,000, 2 = \$40,000-\$60,000).

Maternal education was also coded as a continuous variable, where there were eight possible categories (e.g., 1 = 8th grade or less, 2 = some high school, but no diploma, 3 = high school diploma or equivalent). The z scores of children's family *socioeconomic status* averaged zero ($SD = .88$). Z scores across this sample ranged from -2.04 to 2.42.

Teachers

A total of 45 control teachers were included in the study. Teachers who were a part of the control group received a laptop or iPad and a computerized mathematics curriculum, Building Blocks (Clements & Sarama, 2007); these teachers were not provided with any additional reading curriculum, training, or coaching. Online and paper forms were distributed to teachers in order to obtain information about teachers' professional background and child-specific behaviors or knowledge. Teachers typically completed these forms within two weeks of receipt and they received a small stipend (\$50) upon completion of these forms.

Measures

All assessors (graduate students or former teachers) attended training sessions over a two-day period, during which they completed a full battery on a non-participating child or with the Research Coordinator in order to become certified. The Research Coordinator then scored and evaluated the full assessment to ensure reliability. Trainings with distance assessors were conducted on site and then followed up via online communication and video conferencing. Assessments were administered in the fall and spring of each study year. All child assessments were administered in a quiet area in the schools and all assessments were conducted in English.

Classroom quality. The Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2008) is an observational instrument that measures classroom quality in

kindergarten through third grade classrooms. The entire CLASS observation typically starts at the beginning of the school day and continues throughout the morning for at least 2 hours.

CLASS is comprised of ten dimensions, which are organized into three distinct domains:

Emotional Support (4 dimensions; *Positive Climate*, *Negative Climate*, *Teacher Sensitivity*, and *Regard for Student Perspectives*), *Classroom Organization* (3 dimensions; *Behavior Management*, *Productivity*, and *Instructional Learning Formats*), and *Instructional Support* (3 dimensions; *Concept Development*, *Quality of Feedback*, and *Language Modeling*). All items were scored using a seven-point Likert-type scale, with higher scores reflecting better levels of classroom quality. With this measure, trained coders conducted 20-minute classroom observations and rated the classrooms on the seven-point scale. The internal consistency estimate for CLASS was $\alpha = .81$. The fall scores for *Instructional Support* ($M = 2.53$, $SD = 0.74$). A sample of this measure is included in Appendix C.

Emotional support and classroom organization. I created a composite score that was measured by the mean of the Emotional Support and Classroom Organization domains of the CLASS ($M = 4.77$, $SD = 0.81$) and this score was used in the analysis. In previous studies, researchers have found these domains to be highly correlated (e.g., Curby, Grimm, & Pianta, 2010; Pianta et al., 2008). Although the three-domain structure of the CLASS has been proven reliable, other versions of the CLASS have collapsed the two domains into one. Furthermore, it is expected that although teachers' instructional support plays an important role, teachers' emotional support and classroom organization provide a more applicable context for understanding TCRs. The Cronbach's alpha coefficients ($\alpha = .87$) between the Emotional Support and Classroom Organization domains suggest that these two domains may comprise a

joint indicator of classroom quality. In the following sections, I use this conceptualization to describe the quality of kindergarten and first grade classrooms.

Teacher-child relationships. In the fall and spring of the academic year, teachers completed the Student-Teacher Relationship Scale (STRS; Pianta, 2001). STRS consists of 15 items that assess the quality of relationships between students and teachers across two primary domains: *Closeness* (7 items; e.g., *I share an affectionate, warm relationship with the child*) and *Conflict* (8 items; e.g., *this child and I always seem to be struggling with each other*). Teachers rated students across these two domains, using a five-point Likert-type scale (definitely does not apply = 1, not really = 2, neutral, not sure = 3, applies somewhat = 4, and definitely applies = 5). The STRS total score represents the mean of all items with Conflict items reversed. The internal consistency estimate for STRS was $\alpha = .75$. Children's teacher-rated fall scores (0-5) on the scale were used in the analysis. A sample of this measure is included in Appendix C.

Covariates. The inclusion of certain covariates in analyses that explore TCRs has been well documented throughout the literature. Among these, children's *race* (0 = White, 1 = African American) and *SES* (z score) have been found to be important predictors of children's relationships with their teachers, especially when considered within the context of classroom quality. Demographic information and descriptive statistics on the final sample of students ($n = 423$) are available in Table 4.1. Approximately 181 (42%) students were White and 242 (58%) students were African American. Family income (55% of incomes ranged from 0-\$20,000) and maternal education (14% had a Bachelor's degree) were averaged and transformed into z scores, with values ranging from -2.04 to 2.42.

In addition, the following teacher-level variables were also included in analyses: *teacher education*, *teacher experience*, and *teacher race*. *Teacher education* (0 = Bachelor's degree, 1 =

Master's degree or higher) and *experience* (0 = teaching for five years or fewer, 1 = teaching for five years or more) were included given prior research that documents these teacher-level characteristics as related to classroom quality (Connor, Son, Hindman, & Morrison, 2005). Teacher race (0 = White, 1 = Black) was also included as a categorical dummy variable, given researchers' hypotheses that teachers' race may contribute to negative biases or stereotypes towards minority children and may thereby negatively impact their relationships with their students. Table 4.2 provides descriptive information on the teachers included in the study ($n = 45$). Of the total sample, approximately 26 (58%) were kindergarten teachers and 19 (42%) were first-grade teachers. Approximately 34% of teachers had earned a Masters degree or above. In terms of teachers' race, 78% of the teachers were White and 22% of teachers were African American. Approximately 63% of teachers had five years of experience or above.

Moderators. In this analysis, two important moderators will be included: child gender and struggling reader status. A categorical dummy variable was created for struggling reader status (0 = non-struggling reader, 1 = struggling reader) and child gender (0 = female, 1 = male). In the control sample ($n = 423$), approximately 35% of students were boys ($SD = .48$) and approximately 50% of students were considered to be struggling readers ($SD = .50$).

Analysis Plan

SAS v. 9.3 was used for conducting all analyses. Since randomization was conducted at the classroom level, hierarchical linear modeling was used to account for nesting of children within classrooms (Raudenbush & Bryk, 2002). Two-level HLM analyses of TCR were used, as they yielded significant variation at the unit-level (student) and the cluster-level (classroom). The intraclass correlation coefficients ranged from .18 to .28, indicating that approximately 18-28% of the total observed variability was due to between-classroom differences.

The following equation shows that at level one, Y_{ij} represents the spring score for each quality of TCRs (i.e., closeness and conflict) for the i -th child in the j -th classroom, with random error terms for the classroom (u_{0j}) and students (r_{ij}). At level one, the spring score was modeled as a function of the average classroom score (B_{0j}), the intercept, and it was adjusted for children's struggling reader status ($\beta_{1j}\text{strugglingstatus}_{ij}$), child gender ($\beta_{2j}\text{gender}_{ij}$), and other child covariates ($\beta_{3j}\text{childcovariates}_{ij}$), with each child's residual score (r_{ij}). At level two, the average classroom scores (B_{0j}) were a function of the overall sample average score (γ_{00}), teacher race ($\gamma_{01}\text{trace}_j$), teacher education ($\gamma_{02}\text{ted}_j$), teacher experience ($\gamma_{03}\text{tex}_j$), composite of emotional support and classroom organization ($\gamma_{04}\text{classorgemotsupp}_j$), classroom instructional support ($\gamma_{05}\text{instructionalsupport}_j$), and a classroom-level error term (u_{0j}).

Reduced-Form Model:

$$\begin{aligned} \text{tcr}_{ij} = & [\gamma_{00} + \gamma_{01}(\text{trace})_j + \gamma_{02}(\text{ted})_j + \gamma_{03}(\text{tex})_j + \gamma_{04}(\text{classorgemotsupp})_j + \gamma_{05}(\text{instructionalsupport})_j \\ & + \gamma_{10}(\text{strugglingstatus})_{ij} + \gamma_{20}(\text{gender})_{ij} + \beta_{3j}(\text{childcovariates})_{ij}] \\ & + [r_{ij} + u_{0j}] \end{aligned}$$

Across all the variables, missingness ranged from 0–7%. To handle issues of missing data, I used multiple imputation ($n = 20$) procedures used to account for missing data and to avoid inaccurate estimations (Berglund, 2010; Rubin, 1987). The multiple datasets realistically model the linear relationships among the variables (Shafer & Graham, 2002). The PROC MIANALYZE function in SAS v. 9.3 was used to aggregate the model parameters across the imputed datasets. The imputation models included all of the variables in the analysis models. All continuous model predictors were centered prior to analyses to aid in interpretability. Effect sizes for main associations and interaction terms were calculated using Cohen's d .

Results

In the first research question, I examined whether or not classroom quality predicted to conflictual and/or close TCRs, after controlling for a variety of child- and teacher-level characteristics (as shown in Table 4.3). Of the child demographic variables, child gender was the only variable that I found to significantly predict to the amount of conflict that teachers perceived in their relationships with children ($B = 0.30, p < .001, d = -0.26$); these findings suggest that boys were likely to be rated .30 higher on the conflict subscale. Additionally, overall classroom quality significantly and negatively predicted to conflictual TCRs ($B = -0.24, p = .02, d = -0.25$). Classroom quality was not significantly associated with close TCRs ($B = 0.03, p = 0.70$).

In the second research question, I examined whether or not child gender and struggling status had moderating effects on the associations between classroom quality and TCRs (conflict and/or closeness). Analyses suggested that there were moderating effects for child gender, such that the associations between lower classroom quality and more conflictual TCRs were stronger for boys ($B = -0.38, p = .002$). This interaction is depicted in Figure 4.2. The downward slope indicated that boys who experienced lower classroom quality were also likely to experience more conflictual relationships with their teachers, $t = -12.36, p < .001$. I did not find significant moderating effects for gender on the associations between classroom quality and close TCRs ($B = 0.02, p = .85$). Struggling status had a non-significant moderating effect on the associations between classroom quality and closeness ($B = 0.14, p = .09$) and a non-significant moderating effect on the associations between classroom quality and conflict ($B = -0.16, p = .15$).

Discussion

Many researchers have studied the impacts of classroom qualities and how children fare in classrooms of varying qualities (Burchinal et al., 2008; Rimm-Kaufman, Curby, Grimm,

Nathanson, & Brock, 2009). Despite the growing body of research in this area, researchers have not extensively examined how classroom quality relate to other proximal processes within classrooms. Of the many proximal processes within classrooms, TCRs have consistently emerged as proximal processes that function as important social resources for children (Pianta & Stuhlman, 2004). For example, researchers have found that qualities of TCRs are predictive of child outcomes such as behaviors or literacy achievement (e.g., Brock & Curby, 2014; McCormick & O'Connor, 2015). There has been, however, limited research that has examined whether or not higher classroom quality creates contexts that facilitate proximal processes such as TCRs. The current study used a diverse sample of rural children and teachers to examine the associations between classroom quality and the levels of conflict and/or closeness within TCRs.

In the first research question, I examined whether or not classroom quality was associated with qualities of TCRs. Results from our analyses suggested that above and beyond the effects of child- and teacher-level characteristics, higher classroom quality was associated with less teacher-rated conflict in TCRs ($d = -0.25$). As I hypothesized, qualities of classrooms influence the relationships that teachers and students develop. In this study, teachers' emotional support and classroom organization, which were the two primary indicators of classroom quality, facilitated less conflict between teachers and children. Extant research suggests that teachers are more likely to report conflict with their students when students exhibit behavioral challenges (Birch & Ladd, 1998; Henricsson & Rydell, 2004; Hughes & Cavell, 1999; Murray & Murray, 2004) because teachers may be more frustrated stressed when working with these students. Teachers who show greater competence in managing their classrooms and who demonstrate greater sensitivity towards their students may be able to divert challenges (e.g., stress, behavioral difficulties) that may otherwise negatively impact their relationships with students. It is also

possible that stronger management structures and responsiveness in combination with sensitive teaching practices facilitate learning environments in which students' needs are met, thereby contributing to less strained TCRs. On the other hand, it is also possible that teachers who demonstrate stronger competencies in these areas (i.e., provide higher quality classroom environments) may also be likely to effectively navigate relationships with all of their students. I was surprised that I did not find significant associations between classroom quality and close TCRs. It is possible that classroom quality may not necessarily provide structures that facilitate close TCRs based on the items corresponding to the closeness subscale used in the current study. For example, some of the questions on the STRS related to the closeness dimension inquire about whether the child spontaneously shares information about himself/herself or whether the child openly shares his/her feelings and experiences. Classroom quality may be indicative of structures and routines that do not necessarily provide opportunities for the child to share this type of information with their teachers.

The second research question examined the extent to which there were moderating effects of child gender or struggling status on the associations between classroom quality and TCRs. I expected to find stronger associations between classroom quality and TCRs for struggling readers, but in this study, I did not find strong statistical evidence of significant moderating effects for struggling status. Considering that I did find marginally significant moderating effects, this may be an area that calls for further inquiry and replication. Findings from our study depicted a clearer picture of the moderating effects for child gender. I found significant moderating effects for child gender on the associations between classroom quality and conflictual TCRs. Compared to girls, boys were more likely to experience stronger associations between classroom quality and conflictual TCRs. That is, boys in particular were less likely to

experience conflictual TCRs when they were in classrooms with more emotional support and classroom organization. Consistent with findings of other studies, I found that boys were more likely to experience conflictual relationships with their teachers (Ewing & Taylor, 2009; Gallagher et al., 2013). Findings of this study, however, extend the work of other researchers by highlighting that when teachers are able to cultivate classrooms that provide stronger classroom structures and teacher emotional support, this may minimize the amount of conflict that teachers perceive in their relationships with male students. In this sample of kindergarten and first grade students, male students may have been particularly sensitive to the kinds of structures in place within the classrooms. Since teachers tend to perceive boys as more rambunctious in their classrooms (Gallagher et al., 2013; Myers & Pianta, 2008), boys may potentially benefit from structures and supports in classroom environments, as the structures and supports may minimize behavioral challenges that contribute to conflictual TCRs.

Limitations

Like other studies, findings from this study should be considered in light of a few limitations. The STRS is based on teacher report; consequently, teacher ratings on these measures are prone to teacher biases. Researchers, however, have shown that the STRS is a reliable and valid measure, and it is widely used in empirical studies of TCRs (e.g., Pianta, 2001). Furthermore, teacher perceptions of relationship quality are important because teachers often negotiate the relationships with students, particularly in elementary school. Nevertheless, teacher report is a limitation of the study, and future studies ought to consider including more objective measures that capture TCRs by either using outside observers or by using child reported measures to corroborate teachers' perceptions. Second, given the rural context of the studies, findings from this study may have limitations in its external validity, as they may not be

generalizable to other contexts (e.g., urban, suburban). Future studies should replicate this study in different contexts to disentangle nuances among various locales. Third, this study does not allow for casual inferences and the findings are descriptive in nature. In future work, researchers should consider using other types of study designs that allow for causal inferences related to studies of classroom quality and TCRs.

Future Research & Directions

Presently, this study extends current research by examining how classroom quality is associated with TCRs, and how these associations are moderated by children's struggling reader status and/or gender. In future studies, researchers might consider how other teacher-level characteristics influence the associations between classroom quality and TCRs. Although scholars have examined how teacher-level characteristics such as levels of education or years of experience influence levels of classroom quality, there may be other salient teacher characteristics that also influence these associations. For instance, teachers' level of stress or sense of efficacy within classrooms may be important mechanisms that may influence these associations (Varghese, Garwood, Bratsch-Hines, Vernon-Feagans, 2016). It is important to comprehensively understand how teacher-based characteristics (beyond demographic characteristics) are related to qualities of classroom environments and TCRs. Future research may also examine factors such as child behaviors or engagement that mediate associations between classroom quality and TCRs. It is likely that qualities of TCRs may be influenced by children's behaviors or characteristics within the classroom and more research is needed to understand these types of mediating factors.

Conclusion

Outside of the home environment, early elementary school children spend a majority of their time in classrooms with their teachers. Indeed, classrooms are important contexts that can facilitate dynamic proximal processes such as TCRs. In this study, I sought to understand how classroom quality was related to TCRs. I found that classroom quality was related to less conflictual TCR and I found that boys may especially benefit from this aspect of classroom infrastructures, as this can mitigate the risks of conflictual TCRs. Classrooms characterized by stronger organizational structures and greater teacher attunement to children's emotional needs are likely to have positive influences on the qualities of relationships that teachers are able to form with children. For children in rural schools, opportunities to be in such classrooms are important for not only academic or behavioral outcomes during the school year, but also for relational outcomes that may have long-term effects on children's achievement throughout schooling. It is clear that classroom contexts are highly complex and riddled with nuances that can directly impact individual children in various ways. Classroom contexts and malleable features within these contexts are important components of young children's educational experiences and ought to be further considered in future education reform efforts.

Table 4.1 *Descriptive Information for Student Sample* (N = 423)

	N	% or <i>M</i>	<i>SD</i>	Range	
Grade (% first grade)	423	34.75	0.50	0.00	1.00
Child gender (% male)	423	49.88	0.48	0.00	1.00
Child race (% Black)	418	58.13	0.49	0.00	1.00
Family SES	417	-0.07	0.88	-2.04	2.42
Maternal Education					
No HS Diploma	89	21.60			
HS Diploma	98	23.79			
Associates Degree	168	40.78			
Bachelors Degree	57	13.83			
Family Income					
<= \$20,000	213	54.76			
\$20,001-\$40,000	94	24.16			
\$40,001-\$60,000	39	10.03			
\$60,001-\$80,000	19	4.88			
> \$80,000	24	6.17			
Struggling status (%)	423	50.35	0.50	0.00	1.00

Table 4.2 *Descriptive Information for Teacher Sample* (N = 45)

	N	% or <i>M</i>	<i>SD</i>	Range	
Teacher race (% Black)	42	22.38	0.45	0.00	1.00
Teacher education (% Masters or above)	45	34.04	0.46	0.00	1.00
Teacher experience (% 5 years or more)	45	63.12	0.50	0.00	1.00
Instructional support (CLASS)	41	2.53	0.74	1.00	4.17
Classroom quality (CLASS)	41	4.77	0.81	2.27	6.27

Note. CLASS = Classroom Assessment Scoring System; Classroom quality = Composite Score of Emotional Support and Classroom Organization

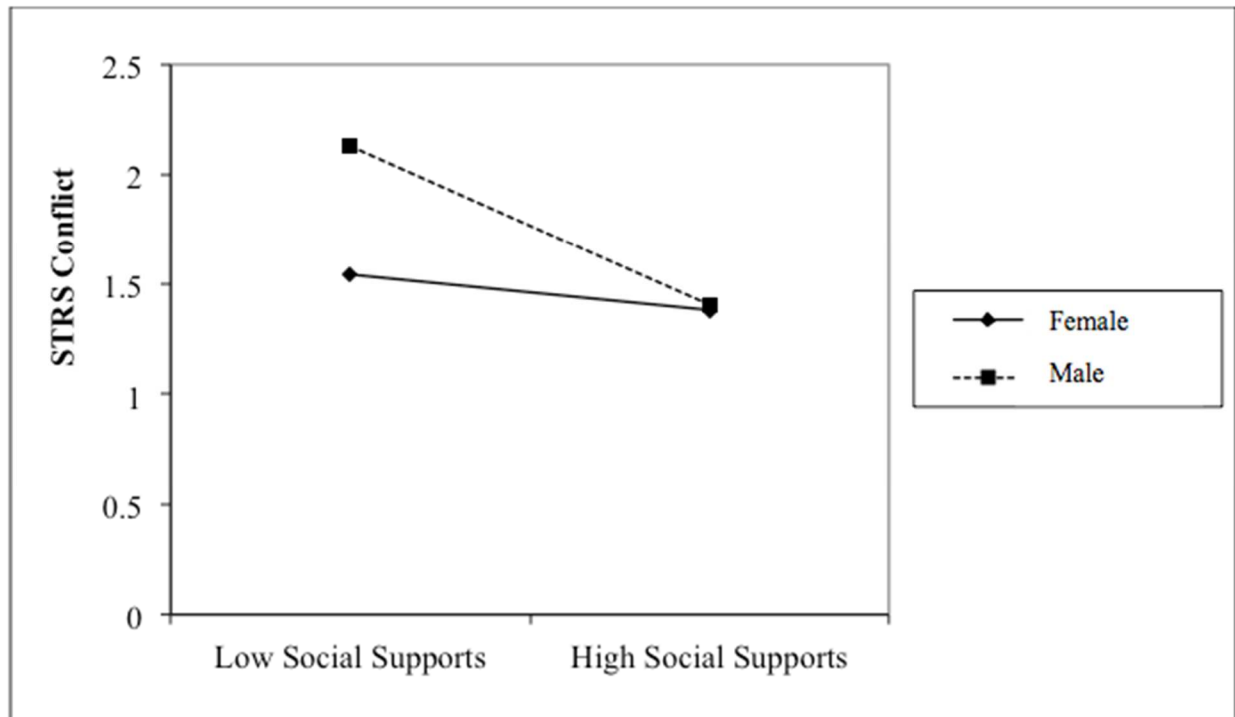
Table 4.3

Multilevel Model Main and Moderation Effects for STRS Conflict and Closeness (n = 423)

	<i>STRS Conflict</i>		<i>STRS Closeness</i>	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
<i>Model 1</i>				
Intercept	2.59	0.43	4.14	0.39
Male	0.30***	0.09	-0.23**	0.07
Black	0.10	0.10	-0.03	0.08
Family SES	-0.05	0.05	0.08 [†]	0.04
Struggling status	0.14	0.09	-0.14*	0.07
Teacher education level	-0.05	-0.02	-0.11	0.12
Teacher experience	0.27	0.15	0.04	0.15
Instructional support (CLASS)	-0.08	0.11	0.04	0.11
Classroom quality (CLASS)	-0.24*	0.10	0.03	0.10
<i>Model 2 – Child Characteristic Interactions</i>				
Classroom quality x Child gender	-0.38***	0.10	0.02	0.08
Classroom quality x Struggling status	-0.16	0.11	0.14 [†]	0.08
<i>Variance Components</i>				
Level 2 (Classroom)	0.14**	0.05	0.14**	0.04
Residual	0.64***	0.05	0.38***	0.03

Note. [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. CLASS = Classroom Assessment Scoring System; Classroom quality = Composite Score of Emotional Support and Classroom Organization

Figure 4.2 Interaction Graph for Gender and STRS Conflict



CHAPTER 5: INTEGRATED DISCUSSION AND CONCLUSION

Introduction

In an era of amplified accountability pressures, federal mandates to minimize opportunity gaps between children have intensified efforts in improving children's educational experiences. Consequently, with such a high premium on children's academic achievement, the stakes for improving schools and classrooms have never been higher. In their efforts to identify ways to mitigate opportunity gaps, researchers have specifically focused on variations within school ecologies that directly contribute to children's educational experiences. Teacher-child relationships (TCRs) are one aspect of school ecologies that are related to children's learning. The current project investigated different aspects of TCRs by focusing on three distinct areas: 1) synthesizing recent empirical research related to TCRs and children's literacy achievement in elementary school; 2) empirically examining associations between TCRs and children's literacy achievement and behavioral outcomes, with a focus on struggling reader status and gender; and 3) empirically examining associations classroom quality and TCRs, with a focus on struggling reader status and gender. In this project, two primary theoretical frameworks, attachment theory and ecological systems theory (Bowlby, 1988; Bronfenbrenner, 1999), were utilized in investigations of TCRs and children's learning during the elementary school years. In the following sections, I summarize the main findings across the three project aims and describe future implications for research and practice.

Summary of Findings

Aim 1 (Chapter 2) provided a systematic review of the associations between TCRs and children's literacy achievement during the elementary school years. In the review, I identified several major themes that emerged: overall associations between TCRs and children's literacy achievement, teacher characteristics (primarily demographic information), and child characteristics and abilities (gender, race, socioeconomic status, language, engagement, and effortful control). In this review, I reported descriptive effect sizes for the associations between close/supportive TCRs and children's literacy achievement and for the associations between conflictual TCRs and children's literacy achievement. I found that although close TCRs were positively related to children's literacy achievement, these effects were relatively small. In comparison, I did not find statistically significant effects for the associations between conflictual TCRs and children's literacy achievement.

The results from the empirical study associated with Aim 2 (Chapter 3) suggested that conflictual TCRs were negatively associated with children's literacy achievement and conflictual TCRs were positively associated with children's internalizing behaviors and externalizing behaviors. I did not find any significant associations between close TCRs and children's literacy achievement or behaviors. This finding contrasted the findings from the meta-analysis (Study 1), which showed significant associations between close TCRs and children's literacy achievement. In the sample of students from Study 2, teachers reported fairly close relationships with their students overall; the lack of variability for close TCRs may have made it difficult to understand how close relationships were related to children's outcomes in the analyses. It is also possible that within rural schools, relational negativity may simply be the more salient predictor of children's learning. Close TCRs may be considered more of a "norm" within rural schools, given that teachers and students tend to come from the same rural communities. Consequently,

relational negativity may be more apparent and readily detectable within rural communities, which may have negative impacts on children's learning. I also investigated associations between children's struggling reader status and TCRs and I found that teachers were more likely to report conflict with their struggling readers, after controlling for child characteristics. Lastly, I examined moderating effects for struggling reader status and gender and I did not find significant moderating effects for gender or struggling reader status on TCRs and children's literacy achievement or behavioral outcomes.

The results from the empirical study associated with Aim 3 (Chapter 4) suggested that classroom quality (a composite of teachers' emotional support and classroom organization) were negatively associated with conflictual TCRs. I did not find statistical evidence for associations between classroom quality and close TCRs. In our follow-up analyses, I examined moderating effects of children's gender and struggling reader status. I found that the associations between classroom quality and conflictual TCRs were stronger for boys, such that boys who experienced higher classroom quality were less likely to have their teachers perceive conflictual relationships with them. I did not find significant moderating effects for struggling reader status in these associations.

Implications for Future Research and Practice

The findings of the current project as a whole suggest that TCRs may have small, but important implications for children's reading achievement and behaviors and that classroom quality influences the type of relationships that teachers perceive with their students. In future work, researchers ought to consider how the continuity or discontinuity of high quality TCRs and classroom environments impacts children's development throughout the elementary school years. It is essential to understand long-term influences, particularly for children who enter

formal schooling with fewer school readiness skills. It is also possible that combinations of child-level characteristics may make children more sensitive to the proximal influences within classrooms. For example, it is possible that children who are struggling readers, come from low socioeconomic backgrounds, and have behavioral challenges may be more likely to benefit from optimal TCRs. Analyses such as latent profile analyses may be useful in distinguishing between populations of children most vulnerable to these types of classroom influences.

In future research, it is important to also understand how racial match between teachers and students impacts their relationships and interactions. Teachers interactions with their students may vary based on cultural differences and this may have subsequent impacts on children's learning. Currently, however, in empirical work that includes information about the ethnic congruence between the child and teacher, researchers have found relatively mixed results (Saft & Pianta, 2001; Ewing & Taylor, 2009). Saft & Pianta (2001) found that teachers were more likely to report relationships as positive when there was an ethnic congruence between children and teachers (Saft & Pianta, 2001); other researchers, however, did not find strong evidence for ethnic congruence as a moderator of TCR quality (Ewing & Taylor, 2009; Gallagher et al., 2013). Aside from ethnic congruence between children and teachers, researchers have also focused on how students' ethnicities TCRs. Gallagher et al. (2013) found that teachers initially reported less closeness with African American students. Within an attachment theory framework, this suggests that African American students may be less likely to feel emotionally secure with their teachers and a lack of emotional security may hinder African American students from capitalizing on available learning opportunities. English proficiency is another student characteristic associated with children's dependency on teachers (Fumoto, Hargreaves, & Maxwell, 2007). When children have limited English proficiency, they may feel

more dependent on their teachers and they may be less inclined to engage in other learning and socialization opportunities. Rudasill and colleagues (2006) also suggest that bolder (i.e., uninhibited) students with less language complexity may also be insecure-avoidant in their relationships with adults. Insecure-avoidant relationships reflect greater student independence and less receptiveness toward adult figures, which may translate to conflictual relationships with teachers (Ainsworth, 1979; Rudasill et al., 2006). Both cultural similarities and differences between teachers and children are likely to influence teachers' perceptions of their relationships with children, which may have subsequent impacts on children's learning during the elementary school years.

Given that TCRs may be an important part of children's learning, it is also important to understand how teachers and other school professionals are prepared for developing supportive relationships with their students. For example, there are interventions such as Banking Time, which may be a useful resource for practitioners that can help foster positive relationships between teachers and children (Pianta & Hamre, 2001). It is important to disseminate findings about interventions that can help teachers and children improve relationships. Additionally, it is important to understand how teachers are being trained to provide high quality classrooms. Although professional development models such as MyTeachingPartner (MTP) have been identified as one way to support teachers in cultivating positive classroom environments for their students, it may be important to begin and embed this training in teacher preparation programs. Lastly, as schools implement Response to Intervention (RTI) or Multi-Tiered Systems of Support (MTSS) models, teachers are increasingly expected to deliver supplemental instruction to struggling students within the context of small group or one-on-one instruction.

Table 5.1: Summary of Key Findings

	Systematic Review (Aim 1)	TCRs → Literacy TCRs → Behavior (Aim 2)	Classroom Quality → TCRs (Aim 3)
Key Findings	<ul style="list-style-type: none"> - Teacher demographics and characteristics not examined as moderators in associations between TCRs & children's literacy - Child demographics (race, gender, SES) and characteristics (e.g., task accuracy) examined as moderators in associations between TCRs & children's literacy; mixed evidence of moderating effects - Mixed evidence for associations between conflictual and close TCRs on literacy achievement 	<ul style="list-style-type: none"> - Struggling reader status related to conflictual and less close TCRs - Conflictual TCRs related to literacy achievement and behaviors (internalizing & externalizing) - Close TCRs not significantly related to literacy or behaviors - No significant moderating effects of gender or struggling reader status 	<ul style="list-style-type: none"> - Classroom quality significantly and negatively predicts to conflictual TCRs, but not close TCRs - Significant moderating effects for gender, but not struggling reader status on associations between classroom quality and TCRs
Recommendations for Future Research & Practice	<ul style="list-style-type: none"> - Mediation, longitudinal analyses; causal inferences - Teacher characteristics as moderators - Different literacy achievement measures 	<ul style="list-style-type: none"> - Professional development & pre-service training on improving TCRs - Conceptualizing TCRs within the context of literacy-specific activities 	<ul style="list-style-type: none"> - Decomposing teacher- and school-level characteristics that moderate associations - Inclusion of child characteristics (e.g., engagement) as mediators

Teachers may find working with struggling readers to be more challenging, and this may have subsequent effects on the relationships that they form with these students, particularly within more individualized contexts. However, positive relationships between teachers and children may be an ingredient of high quality of implementation of intensive academic interventions. More empirical research is needed to understand whether or not struggling readers benefit from interventions delivered within the context of positive TCRs and high quality classroom environments.

In future research, it is also important to understand how TCRs change over time, particularly during the early, middle, and late elementary school years. There is limited research that has utilized longitudinal designs and researchers ought to consider how qualities of TCRs vary over time as well as how TCRs relate to children's learning throughout the elementary school years. There may be longitudinal effects of TCRs on children's academic and socioemotional outcomes that persist throughout schooling and it is important to understand whether or not these effects exist. Additionally, qualities of TCRs are likely to vary within one academic school year and studies that examine variation beyond the beginning and end of the school year may be able to provide more information about child-level and teacher-level characteristics that influence those relational qualities.

Conclusion

TCRs are important social resources for children, especially for children who may be considered to be vulnerable to adverse schooling outcomes. During the early elementary school years, children spend a majority of their time working with the same teacher throughout the year, making them sensitive to classroom-based influences. Findings from this project show that TCRs have significant associations with children's literacy development and behavioral

outcomes and findings also show that within classrooms characterized by strong classroom quality, teachers are less likely to report conflictual relationships with their students. Although home environments and academic interventions are certainly important influences on children's learning and development, the teacher exerts the greatest influence on children's development within the school environment (Cohen-Vogel, 2011). Consequently, continuing a line of inquiry that focuses on the relational qualities between teachers and children is important for understanding how to holistically support children's learning and socioemotional development. Moreover, it is crucial to not only understand *how* TCRs benefit children, but also to understand *which* children benefit most from these relationships and how to best ensure that these children are educated in supportive contexts.

This project as a whole represents an effort to understand and extend our current understanding of optimal TCRs for children's learning and development. The question of '*for whom do positive TCRs matter the most*' should continue to be part of ongoing investigations in future studies. Aspects of this project have implications for teaching practices and for future research, which can ultimately help us to identify ways to improve educational contexts for children – especially for our most vulnerable ones.

APPENDIX A: STUDENT-TEACHER RELATIONSHIPS SCALE

Student Teacher Relationship Scale (STRS)

Instructions for Teacher:

RELATIONSHIPS: Please reflect on the degree to which each of the following statements currently applies to your relationship with this student. Using the scale below, circle the appropriate number for each item.

Response Scale

1 = Definitely Does Not Apply

2 = Does Not Really Apply

3 = Neutral, Not Sure

4 = Applies Sometimes

5 = Definitely Applies

Measure Questions:

		Definitely Does Not Apply	Does Not Really Apply	Neutral, Not Sure	Applies Sometimes	Definitely Applies
1.	I share an affectionate, warm relationship with the child.	1	2	3	4	5
2.	This child and I always seem to be struggling with each other.	1	2	3	4	5
3.	If upset, this child will seek comfort from me.	1	2	3	4	5
4.	This child is uncomfortable with physical affection or touch from me.	1	2	3	4	5
5.	This child values his/her relationship with me.	1	2	3	4	5
6.	When I praise this child, he/she beams with pride.	1	2	3	4	5
7.	This child spontaneously shares information about himself/herself.	1	2	3	4	5
8.	This child easily becomes angry at me.	1	2	3	4	5
9.	It is easy to be in tune with what this child is feeling.	1	2	3	4	5

10	This child remains angry or resistant after being disciplined.	1	2	3	4	5
11	Dealing with this child drains my energy.	1	2	3	4	5
12	When this child wakes up in a bad mood, I know we're in for a long and difficult day.	1	2	3	4	5
13	This child's feelings toward me can be unpredictable or can change suddenly.	1	2	3	4	5
14	This child is sneaky or manipulative with me.	1	2	3	4	5
15	This child openly shares his/her feelings and experiences with me.	1	2	3	4	5

APPENDIX B: STRENGTHS AND DIFFICULTIES QUESTIONNAIRE

Strengths and Difficulties Questionnaire (SDQ)

Instructions for Teacher:

STRENGTHS AND DIFFICULTIES: For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of the child's behavior. Circle only one response per item.

Response Scale

0 = Not True

1 = Somewhat True

2 = Certainly True

Measures Questions:

		Not True	Somewhat True	Certainly True
1.	Considerate of other people's feelings	0	1	2
2.	Restless, overactive, cannot stay still for long	0	1	2
3.	Often complains of headaches, stomach-aches or sickness	0	1	2
4.	Shares readily with other children, for example toys, treats, pencils	0	1	2
5.	Often loses temper	0	1	2
6.	Rather solitary, prefers to play alone	0	1	2
7.	Generally well behaved, usually does what adults request	0	1	2
8.	Has many worries or often seems worried	0	1	2
9.	Helpful if someone is hurt, upset or feeling ill	0	1	2
10.	Constantly fidgeting or squirming	0	1	2
11.	Has at least one good friend	0	1	2
12.	Often fights with other children or bullies them	0	1	2
13.	Often unhappy, depressed or tearful	0	1	2
14.	Generally liked by other children	0	1	2
15.	Easily distracted, concentration wanders	0	1	2
16.	Nervous or clingy in new situations, easily loses confidence	0	1	2
17.	Kind to younger children	0	1	2
18.	Often lies or cheats	0	1	2
19.	Picked on or bullied by other children	0	1	2
20.	Often offers to help others (parents, teachers, other	0	1	2

	children)			
21.	Thinks things out before acting	0	1	2
22.	Steals from home, school or elsewhere	0	1	2
23.	Gets along better with adults than with other children	0	1	2
24.	Many fears, easily scared	0	1	2
25.	Good attention span, sees work through to the end	0	1	2

		No	Yes- minor difficulties	Yes – Definite difficulties	Yes – Severe difficulties
32.	Overall, do you think that this child has difficulties in any of the following areas: emotions, concentration, behavior or being able to get along with other people?	0	1	2	3
	If you answered "Yes" to #32, please answer the following four questions about those difficulties...				
		Not at all	Only a little	Quite a lot	A Great Deal
34.	Do the difficulties upset or distress the child?	0	1	2	3
	Do the difficulties interfere with this child's everyday life in the following areas...				
36.	Friendships?	0	1	2	3
37.	Classroom Learning?	0	1	2	3
39.	Do the difficulties put a burden on you or the classroom as a whole?	0	1	2	3

APPENDIX C: CLASSROOM ASSESSMENT SCORING SYSTEM

CLASS Observation Sheet

CONTENT (circle all; check majority): Lit/Lang Arts Math Science Social Studies Art Other: _____	FORMAT (circle all; check majority): Routine Whole group Individual time Meals/snacks Small group Free choice/centers
---------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------

Circle appropriate score.														
Positive Climate (PC) - Relationships - Positive Affect - Positive Communication - Respect	Notes	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">6</td> </tr> <tr> <td style="text-align: center;">7</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	1	2	3	4	5	6	7					
1	2	3	4	5	6									
7														
Negative Climate (NC) - Negative Affect - Punitive Control - Sarcasm/Disrespect - Severe Negativity	Notes	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">6</td> </tr> <tr> <td style="text-align: center;">7</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	1	2	3	4	5	6	7					
1	2	3	4	5	6									
7														
Teacher Sensitivity (TS) - Awareness - Responsiveness - Addresses Problems - Student Comfort	Notes	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">6</td> </tr> <tr> <td style="text-align: center;">7</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	1	2	3	4	5	6	7					
1	2	3	4	5	6									
7														
Regard for Student Perspectives (RSP) - Flexibility and Student Focus - Support for Autonomy and Leadership - Student Expression - Restriction of Movement	Notes	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">6</td> </tr> <tr> <td style="text-align: center;">7</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	1	2	3	4	5	6	7					
1	2	3	4	5	6									
7														

Behavior Management (BM) <ul style="list-style-type: none"> - Clear Behavior Expectations - Proactive - Redirection of Misbehavior - Student Behavior 	Notes	<div>1 2 3 4 5 6</div> <div>7</div>
Productivity (PD) <ul style="list-style-type: none"> - Maximizing Learning Time - Routines - Transitions - Preparation 	Notes	<div>1 2 3 4 5 6</div> <div>7</div>
Instructional Learning Formats (ILF) <ul style="list-style-type: none"> - Effective Facilitation - Variety of Modalities and Materials - Student Interest - Clarity of Learning Objectives 	Notes	<div>1 2 3 4 5 6</div> <div>7</div>
Concept Development (CD) <ul style="list-style-type: none"> - Analysis and Reasoning - Creating - Integration - Connections to the Real World 	Notes	<div>1 2 3 4 5 6</div> <div>7</div>
Quality of Feedback (QF) <ul style="list-style-type: none"> - Scaffolding - Feedback Loops - Prompting Thought Processes - Providing Information - Encouragement and Affirmation 	Notes	<div>1 2 3 4 5 6</div> <div>7</div>
Language Modeling (LM) <ul style="list-style-type: none"> - Frequent Conversation - Open-Ended Questions - Repetition and Extension - Self- and Parallel Talk - Advanced Language 	Notes	<div>1 2 3 4 5 6</div> <div>7</div>

Dimension Descriptions for the CLASS

Low range		Middle range			High range	
1	2	3	4	5	6	7
The low-range description fits the classroom and/or teacher very well. All, or almost all, relevant indicators in the low range are present.	The low-range description mostly fits the classroom and/or teacher, but there are one or two indicators that are in the middle range.	The middle-range description fits the classroom and/or teacher, but there are one or two indicators in the low range.	The middle-range description fits the classroom and/or teacher very well. All, or almost all, relevant indicators in the middle range are present.	The middle-range description mostly fits the classroom and/or teacher, but there are one or two indicators in the high range.	The high-range description mostly fits the classroom and/or teacher, but there are one or two indicators in the middle range.	The high-range description fits the classroom and/or teacher very well. All, or almost all, relevant indicators in the high range are present.

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